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JOURNAL *of the*

American Veterinary Medical Association

Formerly AMERICAN VETERINARY REVIEW

(Original Official Organ U. S. Vet. Med. Assn.)

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APRIL, 1936

No. 4

MR. GUARD STATES THE FACTS

Mr. Samuel R. Guard, editor-publisher of the *Breeders' Gazette*, has rendered a valuable service to the live stock industry of this country by exposing some of the methods employed by the Graham Scientific Breeding School of Kansas City. "This outfit has been preying on the gullible farmers and stockmen of the country just about long enough," said one commentator, after reading Mr. Guard's first article, which appeared in February.

Misleading advertising has been used to further the financial interests of this itinerant "school," and the surprising thing is that this sort of advertising has been accepted by and run in quite a number of supposedly reputable and self-respecting farm papers that would have it appear in their editorial columns, at least, that they were working in the interests of agriculture in general, and our animal industry in particular. Evidently there have been solid walls between the editorial offices and the advertising departments of some of these papers.

It has been interesting to read some of the letters written Mr. Guard by readers of his paper. He has been the center of a barrage of brickbats and bouquets, with the latter by far in the

majority, we are pleased to say. Some of the most illuminating letters have come from "graduates" of the "school." Most of these writers evidently feel that they learned something by taking the course. At the same time, we cannot help but feel that they paid a high price for what they got, and we are of the opinion that courses of instruction along the lines attempted might well be offered under more favorable auspices.

It must be admitted that there is an insatiable demand for knowledge nowadays. People want information, and if they cannot get it one way, they will try some other. This being the situation, there is always somebody ready to supply that for which there is a demand. Whether that somebody is capably equipped to supply the demand does not seem to matter very much these days. High-pressure salesmanship and misleading advertising have filled the void, in this case at least.

We share the hope of Mr. Guard that some good may come of his exposé of a questionable enterprise. Veterinarians have not escaped criticism at the hands of numerous stockmen who have written Mr. Guard. Practitioners have been censured for withholding knowledge from their clients, both actively and passively. Under the latter category, veterinarians are being censured for not doing the very thing that the Graham outfit has been trying to do, namely, give instruction to owners of live stock as to the best methods of herd management, farm hygiene, barnyard sanitation, disease prevention, or whatever you choose to call it. Lately the "course" has been featuring Bang's disease.

Mr. Guard has indicated a very deep interest in the problem of getting the live stock industry and the veterinary profession closer together. He fully appreciates the difficulties which must be overcome in many sections of the country, particularly where the number and value of the live stock is insufficient to support a veterinarian in private practice. He is highly desirous of some plan being developed whereby existing veterinary service may be made available to a larger number of owners of animals on a basis that will be economically attractive to those who have to pay for veterinary service. Mr. Guard estimates that farmers and breeders have paid half a million dollars to Mr. Graham as "tuition fees" for being allowed to attend his "school." Think that over.

The sixty-fifth annual meeting of the American Public Health Association will be held in New Orleans, La., October 20-23, 1936.

DEATHS

Death has taken an unusually large number of prominent veterinarians during recent weeks. The A. V. M. A. lost one of its most distinguished past presidents, Dr. Thomas Edward Munce, of Harrisburg, Pa., on March 17, after an illness of two weeks, due to pneumonia. Our Honor Roll has lost another veteran member, Dr. George H. Berns, of Brooklyn, N. Y., who died on February 15, after a protracted illness. A former member of the Executive Board and an outstanding practitioner, Dr. Burton W. Conrad, of Sabetha, Kan., passed away on March 14. Dr. Edward M. Ranck, of Lancaster, Pa., a member of the old Executive Committee of the A. V. M. A., died on February 15. Dr. Conrad's death is recorded elsewhere in this issue. Obituaries of the others will be published next month.

LONE STAR STATE ACCREDITED

It was quite fitting that the Lone Star State should attain the goal of being a tuberculosis-free state during the year in which Texas commemorates one hundred years of independence as a republic and a state. In 1836, Texas broke away from Mexico and became an independent republic, an event that is being celebrated by the holding of the Southwest's first world's fair—the Texas Centennial Exposition, which will open in Dallas on June 6. Texas is the thirty-eighth state to be declared a modified accredited area. Texas is not only the largest state in the Union, but it has more cattle than any other state. There were more than 7,000,000 cattle of all classes reported in the Lone Star State last year. So, 1936 will go down in history as the year when Texas declared its independence from bovine tuberculosis.

EXECUTIVE BOARD ELECTIONS

The primary elections now in progress in two Executive Board districts will come to a close on April 11. These elections are being held in District 6 (California, Nevada, Utah, Colorado, New Mexico, Arizona, Mexico, Central America and the Canal Zone) and District 8 (Kansas, Missouri, Oklahoma, Arkansas, Texas and Louisiana), and are for the purpose of selecting nominees for the election proper, which will be held immediately following the primaries. The polls will remain open for 60 days, as prescribed by the by-laws.

COLUMBUS A CENTER OF CULTURE

Columbus, the A. V. M. A. convention city of 1936, is an educational and cultural center of prominence. There are four universities and colleges within the metropolitan area: Ohio State University, Capital University, Otterbein College and Josephinum College. The Battelle Memorial Institute also is found here, a great laboratory memorial to local pioneers in the steel industry and a great center for scientific and industrial research. Orton Memorial Laboratory and the Ceramics Department of Ohio State University are preëminent in the field of ceramics research. Columbus is also the headquarters for the American Ceramics Society. The number and excellence of the cusical and art offerings, with the interest shown in the promotion of these arts, has directed a large number of Columbus people into national prominence in the fields of art, music, stage and screen.

Official headquarters will be at the Deshler-Wallick, the leading hotel in Columbus. Mark your calendar right now.

August 11-12-13-14

APPLICATIONS FOR MEMBERSHIP

Another imposing list of new applications is being given first listing this month. There are 28 names on the list and, contrary to what has been the case during recent months, one state contributes a considerable percentage of the applicants. South Dakota came through with 13 applications the past month, and now heads the procession of states based on the number of applications received during the present association year. South Dakota now has a total of 15 to her credit, leading California, Ohio and Pennsylvania, with nine each. Just one more word in this connection—keep your eyes on Ohio, from now on.

Here are the 28 men who want to be identified with their national organization:

(See January, 1936, JOURNAL)

FIRST LISTING

ANTLE, F. F.	De Smet, S. Dak.
D. V. M., McKillip Veterinary College, 1917	
Vouchers: C. H. Hays and M. M. Davis.	
ATWOOD, GEORGE B.	Arlington, S. Dak.
B. Sc., South Dakota State College, 1912	
D. V. M., Kansas City Veterinary College, 1916	
Vouchers: C. H. Hays and M. M. Davis.	
BARBER, CLIFFORD W.	Colorado State College, Fort Collins, Colo.
D. V. M., Colorado State College, 1931	
Ph. D., Cornell University, 1935	
Vouchers: I. E. Newsom and R. F. Bourne.	

BEEBE, LYLE H. Warrensburg, Mo.
D. V. M., Kansas State College, 1930
Vouchers: C. H. Hays and R. R. Dykstra.

BYRON, J. P. Bristol, S. Dak.
D. V. S., Western Veterinary College, 1906
Vouchers: C. H. Hays and E. E. Flory.

CELLAR, PAUL M. 2004 Quarrier St., Charlestown, W. Va.
D. V. M., Ohio State University, 1931
Vouchers: Earl N. Moore and H. M. Newton.

CURTIS, JOHN I. 240 W. Center St., Richfield, Utah
D. V. M., Colorado State College, 1916
Vouchers: D. E. Madsen and O. G. Larsen.

FITZGERALD, THEODORE C. 2710 Zollinger Rd., Columbus, Ohio
D. V. M., Ohio State University, 1928
M. S., Ohio State University, 1932
Vouchers: C. L. Haupert, Jas. D. Grossman and W. F. Guard.

FRITTS, KENNETH H. Humboldt, S. Dak.
D. V. M., Iowa State College, 1931
Vouchers: C. H. Hays and M. M. Davis.

GRAYBILL, GUY M. 604 Shoemaker Ave., Jenkintown, Pa.
V. M. D., University of Pennsylvania, 1907
Vouchers: C. J. Marshall and F. E. Lentz.

HINKLEY, J. L. Salem, S. Dak.
D. V. M., Kansas City Veterinary College, 1913
Vouchers: C. H. Hays and M. M. Davis.

JEWELL, HAROLD J. 125-127 West 23rd St., Oklahoma City, Okla.
D. V. M., Kansas State College, 1935
Vouchers: Samuel R. Espy and E. R. Frank.

LAWRENCE, MICHAEL P. 37-19 Junction Ave., Corona, L. I., N. Y.
D. V. M., Cornell University, 1933
Vouchers: Frank Bloom and Robert Berens.

MADSEN, PETER E. 302 Federal Bldg., Cheyenne, Wyo.
D. V. M., Colorado State College, 1931
Vouchers: W. A. Sullivan and F. H. Melvin.

MALLOY, FRANCIS A. c/o Eugene Sullivan, Montrose, S. Dak.
D. V. M., Iowa State College, 1934
Vouchers: C. H. Hays and M. M. Davis.

MILLER, ALBERT R. 625 6th St., Brookings, S. Dak.
D. V. M., Kansas City Veterinary College, 1912
Vouchers: C. H. Hays and M. M. Davis.

MOUW, JOHN E. B. Garretson, S. Dak.
D. V. M., Kansas State College, 1935
Vouchers: C. H. Hays and E. A. Dornbusch.

PIERCE, FOSTER H. Ipswich, S. Dak.
D. V. S., Kansas City Veterinary College, 1909
Vouchers: C. H. Hays and M. M. Davis.

POLLMAN, GERHART A. Freeman, S. Dak.
D. V. M., Iowa State College, 1934
Vouchers: C. H. Hays and M. M. Davis.

SADLER, KENNETH E. Wagner, S. Dak.
D. V. M., Kansas State College, 1935
Vouchers: Frank Hussey and M. M. Davis.

SAINT CLAIR, LORENZ E. Colorado State College, Fort Collins, Colo.
D. V. M., Colorado State College, 1935
Vouchers: I. E. Newsom and B. R. McCrory.

SMITH, KENNETH W.	Lewiston, Utah
D. V. M., Colorado State College, 1932	
Vouchers: D. E. Madsen and O. G. Larsen.	
STILES, JOHN E.	613 S. Vienna St., Ruston, La.
D. V. M., Alabama Polytechnic Institute, 1935	
Vouchers: W. W. Wiseman and A. D. Kendrick.	
SWAIL, LAWRENCE H.	10810 84th Ave., Edmonton, Alta., Can.
B. V. Sc., Ontario Veterinary College, 1913	
Vouchers: J. C. Phillips and R. C. Duthie.	
TAYLOR, REX	44 S. Fourth St., San Jose, Calif.
B. S., D. V. M., State College of Washington, 1930	
Vouchers: P. H. Browning and E. R. Braun.	
TRUMAN, LEWIS R.	Bryant, S. Dak.
D. V. M., McKillip Veterinary College, 1920	
Vouchers: C. H. Hays and E. E. Flory.	
VIERLING, CLARENCE C.	Winterset, Iowa
D. V. M., Kansas State College, 1935	
Vouchers: G. E. Melody and C. H. Hays.	
WARNE, CLYDE J.	Lake Preston, S. Dak.
D. V. M., Kansas City Veterinary College, 1918	
Vouchers: E. E. Flory and C. H. Hays.	

Applications Pending

SECOND LISTING

(See March, 1936, JOURNAL)

Allam, Mark W., 5th & Providence Rd., Media, Pa.
 Barnes, Lowell R., Box 844, San Juan, Puerto Rico.
 Bartlett, Lt. Densil C., Box 1921, Roanoke, Va.
 Carter, William A., Weldon, N. C.
 Chastain, Ernest F., Gazelle, Calif.
 Clower, T. B., 1302 W. Hill Ave., Valdosta, Ga.
 Corwin, Louis A., 136-21 Hillside Ave., Jamaica, L. I., N. Y.
 Dee, Claud M., Box 337, Ogden, Utah.
 Dorrough, Bill, 3000 4th Ave. S., Leeds, Ala.
 Ferrall, Walter C., 28 Woodland Ave., Columbiana, Ohio.
 Flint, Jean C., 1307 S. State St., Salt Lake City, Utah.
 Fuller, Robert C., Box 68, Quitman, Ga.
 Graves, Phil H., Box 196, Idaho Falls, Idaho.
 Groth, Aaron H., Colorado State College, Fort Collins, Colo.
 Haas, George F., Veteran, Wyo.
 Jensen, Christian G., 722-23 State Office Bldg., Lansing, Mich.
 Keigan, Emmett E., 1423 Branard St., Houston, Texas.
 Kolo, Ralph, 8129 Princeton Ave., Chicago, Ill.
 Libby, Leslie R., R. 2, Sebastopol, Calif.
 Lusco, Robert P., 1930 Center St., Birmingham, Ala.
 Matthews, Alvin R., 158 N. E. 5th St., Miami, Fla.
 Milligan, James H., 2 Vickers St., Montgomery, Ala.
 Morse, Lt. Joseph B., 3rd Corps Area Hdqrs., Baltimore, Md.
 North, Arthur F., Jr., Millar Animal Hospital, Deal, N. J.
 Pritchett, Horace D., 7948 Loretta Ave., Philadelphia, Pa.
 Putnam, John L., Box 4921, East Liberty, Pittsburgh, Pa.
 Seibold, William S., Guntersville, Ala.
 Smith, Hermon B., Box 71, Farmville, N. C.
 Thome, J. W., 488 Edgewood Ave., N. E., Atlanta, Ga.
 Trumble, John W., 1000 Bates St. S. E., Grand Rapids, Mich.
 Ulmer, William E., Bedford Rd. & King St., Chappaqua, N. Y.

Utah
n. La.
Can.
Calif.
Dak.
Iowa
Dak.

Wennergren, Oscar, 355 N. 4th St. E., Logan, Utah.

Younce, Ralph R., c/o Howard Hotel, Brigham City, Utah.

The amount which should accompany an application filed this month is \$8.75, which covers membership fee and dues to January 1, 1937, including subscription to the JOURNAL.

COMING VETERINARY MEETINGS

New York City, Veterinary Medical Association of. Hotel New Yorker, 8th Ave. and 34th St., New York, N. Y. April 1, 1936.

Dr. R. S. MacKellar, Jr., Secretary, 329 W. 12th St., New York, N. Y.

Saint Louis District Veterinary Medical Association. Melbourne Hotel, Saint Louis, Mo. April 1, 1936. Dr. Milton R. Fisher, Secretary, 4405 W. Pine St., Saint Louis, Mo.

Houston Veterinary Association. Houston, Texas. April 2, 1936. Dr. D. B. Strickler, Secretary, 317 Federal Bldg., Houston, Texas.

Maine Veterinary Medical Association. Bangor, Me. April 8, 1936. Dr. S. W. Stiles, Secretary, Falmouth Foreside, Me.

Southeastern Michigan Veterinary Medical Association. Detroit, Mich. April 8, 1936. Dr. F. D. Egan, Secretary, 17422 Woodward Ave., Detroit, Mich.

Chicago Veterinary Medical Association. Palmer House, Chicago, Ill. April 14, 1936. Dr. O. Norling-Christensen, Secretary, 1904 W. North Ave., Chicago, Ill.

San Diego County Veterinary Medical Association. San Diego, Calif. April 14, 1936. Dr. L. K. Knighton, Secretary, 3438 Mountain View Drive, San Diego, Calif.

American Animal Hospital Association. Hotel Jefferson, Saint Louis, Mo. April 14-15, 1936. Dr. D. A. Eastman, Secretary, 901 Nineteenth St., Moline, Ill.

Southern California Veterinary Medical Association. Chamber of Commerce Building, Los Angeles, Calif. April 15, 1936. Dr. L. E. Pike, Secretary, 1220 Bennett Ave., Long Beach, Calif.

Kansas City Veterinary Association. Baltimore Hotel, Kansas City, Mo. April 21, 1936. Dr. C. C. Foulk, Secretary, 1103 E. 47th St., Kansas City, Mo.

Keystone Veterinary Medical Association. School of Veterinary Medicine, University of Pennsylvania, Philadelphia, Pa. April 22, 1936. Dr. J. A. Mehan, Secretary, 39th St. & Woodland Ave., Philadelphia, Pa.

Massachusetts Veterinary Association. Hotel Westminster, Boston, Mass. April 22, 1936. Dr. H. W. Jakeman, Secretary, 44 Bromfield St., Boston, Mass.

Southwestern Minnesota Veterinary Medical Association. Redwood Falls, Minn. April 30, 1936. Dr. Louis E. Stanton, Secretary, Jackson, Minn.

Inland Empire Veterinary Medical Association. State College of Washington, Pullman, Wash. May 2, 1936. Dr. E. M. Gildow, Secretary, University of Idaho, Moscow, Idaho.

Connecticut Veterinary Medical Association. Dr. Edwin Laitinen's Hospital, 993 N. Main St., West Hartford, Conn. May 6, 1936. Dr. Geo. E. Corwin, Secretary, State Office Bldg., Hartford, Conn.

Hudson Valley Veterinary Medical Society. Catskill, N. Y. May 13, 1936. Dr. J. G. Wills, Secretary, Box 751, Albany, N. Y.

Michigan-Ohio Veterinary Medical Association. Blissfield, Mich. May 14, 1936. Dr. E. C. W. Schubel, Secretary, Blissfield, Mich.

Colorado Veterinary Medical Association. Veterinary Hospital, Colorado State College, Fort Collins, Colo. May 27-29, 1936. Dr. B. R. McCrory, Secretary, Colorado State College, Fort Collins, Colo.

American Veterinary Medical Association. Deshler-Wallick Hotel, Columbus, Ohio. August 11-14, 1936. Dr. H. Preston Hoskins, Secretary, 221 N. La Salle St., Chicago, Ill.

STATE BOARD EXAMINATIONS

Oklahoma State Board of Veterinary Medical Examiners. State Capitol, Oklahoma City, Okla. May 12, 1936. Dr. Walter H. Martin, Secretary, 101 S. Evans St., El Reno, Okla.

Nebraska Bureau of Examining Boards. State House, Lincoln, Neb. June 29-30, 1936. Applications must be on file at the Bureau not later than 15 days prior to date of examination. Mrs. Clark Perkins, Director, Bureau of Examining Boards, State House, Lincoln, Neb.

Massachusetts Board of Registration in Veterinary Medicine. Department of Civil Service and Registration, Boston, Mass. June 30-July 1, 1936. Applications may be obtained from the Secretary. Dr. E. W. Babson, Secretary, Gloucester, Mass.

MEGACOLON (HIRSCHSPRUNG'S DISEASE) IN A DOG: REPORT OF A CASE*

By LUTHER H. WOLFF and CARL F. SCHLOTTHAUER

*Division of Experimental Medicine
The Mayo Foundation, Rochester, Minnesota*

INTRODUCTION

Hirschsprung's description of megacolon, "a condition of congenital, high-grade dilatation of the colon with thickening of all its tunics, especially the tunica muscularis, and retention of large quantities of fecal matter," adequately defines this disease. Megacolon has been variously designated as "congenital idiopathic dilatation of the colon"; "Hirschsprung's disease," after Hirschsprung, who first established the disease as a clinical entity in 1886, and "Mya's disease," after Mya, who described the condition in 1894.¹

TYPES OF MEGACOLON

Megacolon can be roughly separated into two types: (1) the congenital and (2) the acquired. In the congenital type there is no demonstrable mechanical obstruction to fecal extrusion. The acquired type follows some chronic mechanical obstructive process such as strictures of the rectum, spastic contractures of the sphincter ani, valve formations in the colon, elongation of the colon with torsion and kinking, or slowly growing carcinoma with chronic obstruction.

FREQUENCY OF OCCURRENCE

Megacolon of human beings: True congenital megacolon is comparatively rare among human beings. Smith² reviewed the literature to 1915 and found 392 cases reported. Rankin and Learmonth³ reviewed 76 cases of megacolon which were seen at the Mayo Clinic from 1908 to 1932. In 62 of these cases the disease was of the congenital or idiopathic type. Since 1927, when surgical treatment of Hirschsprung's disease by lumbar sympathectomy and ganglionectomy was devised, reports of cases are relatively much more frequent in the medical literature of all languages than they were before. It is possible that improved facilities for diagnosis, particularly the increased use of the barium enema and roentgenograms, account for the more frequent recognition of this condition among human beings at present.

*Presented at the seventy-second annual meeting of the American Veterinary Medical Association, Oklahoma City, Okla., August 27-30, 1935.

Megacolon of animals: No reference to the occurrence of "idiopathic" megacolon among animals could be found in veterinary literature.* However, it is possible that in some of the reported cases in which there was dilation of the rectum and colon, which was thought to be the result of some atresia of the anus, the condition was true Hirschsprung's disease. In view of the fact that no mention of the disease appears in veterinary literature, in contrast to the extensive literature on its occurrence among human beings, it was thought that the case cited below should be reported.

CLINICAL DESCRIPTION

The clinical syndrome of megacolon of human beings varies remarkably as to the degree of severity of symptoms. The usual picture is that of a pale, undernourished infant or child with an extremely large abdomen. The history of profound constipation is invariably obtained. Laxatives usually have had little effect. At long intervals, varying up to three months, and usually the result of an enema, the child may have evacuated an enormous amount of fecal material. Cramp-like abdominal pains may have been present intermittently. It is surprising how few toxic symptoms are present, even though the bowels have not moved for a long time. On examination, visible peristalsis may be seen at times. The diagnosis is easily confirmed by a barium enema and roentgenograms. In many cases, especially if the patient is an adult, the condition may have been present for years without producing symptoms other than constipation and abdominal distention. In reviewing the cases reported, one is impressed with the number of cases in which constipation and enlargement of the abdomen are the only symptoms.

PATHOLOGY

The pathology of Hirschsprung's disease consists of two characteristic changes, namely, dilation and hypertrophy of the colon. These changes may be limited to segments of the colon, or may involve the entire large intestine. Adamson and Aird⁴ reported that the pelvic colon is affected alone in 37 per cent of the cases, and in 34 per cent of the cases, the rectum is also involved. Rankin, Bargen and Buie⁵ said that the sigmoid flexure of the colon is the site most frequently involved. Dilation is practically always associated with elongation of the colon, but the

*Since this case report was prepared and edited, Dr. J. V. Lacroix (North American Veterinarian, xvi (1935), No. 9, pp. 42-44) has reported a case designated as "coprostasis in a spaniel," which, from his description of the clinical history, symptoms and necropsy findings, is similar to the case reported by us.

elongation is a part of the general dilation and not a result of congenital oligocolon (Hurst⁶).

Microscopically, the most striking change is the immense hypertrophy of the muscular coats of the intestine, particularly hypertrophy of the circular fibers. The submucosa contains large numbers of blood-vessels with cellular infiltrations and increased connective tissue elements. The mucous membrane is thrown into folds, and is often ulcerated as a result of pressure of the hard feces. The serosa is little changed. The omentum and mesentery are often thickened and vascular, and contain enlarged lymph-nodes (Mitchell and Semmes⁷).

As will be mentioned later, evidence points strongly to a neurogenic origin of megacolon. However, Adamson and Aird⁸ could find no change in the pelvic nerves in the cases they observed, except some thickening of the epineural tissue. Thus, according to our present knowledge, the pathologic change consists only of dilation and hypertrophy of the colon.

ETIOLOGY

The theories of the etiology of megacolon fall into three general groups: (1) developmental (2) mechanical and (3) neurogenic.

Developmental causes: Some of the earlier writers considered the condition one of developmental dilation with secondary hypertrophy; or, developmental hypertrophy with secondary dilation. However, nature of the developmental defect has never been explained or demonstrated.

Mechanical causes: Wilkie⁸ propounded the theory that valves in the colon were responsible for the stasis. Others have variously suggested that torsion of a long mesocolon, kinking at the pelvirectal junction, rectal and anal atresia, and so forth have been the causative agent in Hirschsprung's disease. These conditions might lead to a secondary megacolon, but in true Hirschsprung's disease such defects cannot be demonstrated.

Neurogenic causes: Before considering the neurogenic theories of megacolon, a brief description of the innervation and physiology of the colon and anus will assist in clarifying the various theories and the resultant advances in the surgical procedures.

The motor innervation of the colon is derived from the parasympathetic system through the pelvic nerves, or the nervi erigentes. These nerves are derived by the union of the second, third and fourth sacral autonomic nerves. Stimulation of these nerves causes contraction of both the circular and longitudinal

muscular fibers of the colon (Bayliss and Starling⁹) and relaxation of the internal sphincter (Learmonth and Markowitz¹⁰).

The inhibitory nerves to the colon consist of the sympathetic nerves which arise from the inferior mesenteric ganglion and form the presacral lumbar colonic nerves.⁹ Stimulation of these nerves causes relaxation of the large intestine and contraction of the internal sphincter.¹¹

Thus, there exists in the colon a balance between the parasympathetic (motor) control and the sympathetic (inhibitory) control. Stimulation of the former results in movement of fecal masses as a result of increased peristalsis and relaxation of the internal sphincter ani, while stimulation of the latter permits filling of the colon because of relaxation of the intestinal musculature and contraction of the internal sphincter.

The neurogenic theories of the etiology of megacolon are based on the physiologic properties just described. It is believed that either overstimulation of the sympathetic nerves or insufficient stimulation of the parasympathetic nerves leads to dilation of the colon. Fenwick¹² ascribed the condition to a reflex spasm of the internal sphincter, which would result from an over-stimulation of the sympathetic nerves. Hurst⁶ believed that an inability of the internal sphincter to relax is responsible for megacolon, a situation which would result from an understimulation of the parasympathetic nerves. Pennato¹³ ascribed the process to paralysis of a segment of the intestine. Others do not specify which of the lesions is responsible, but merely say that the disease is the result either of an overbalanced sympathetic system or an understimulated parasympathetic system.

The neurogenic theories are attractive and have considerable evidence to support them. There are many reports of cure or improvement which followed the treatment of Hirschsprung's disease by severance of the sympathetic nerves, or lumbar ganglionectomy and ramisection. However, this improvement is only presumptive evidence that the fault lies in defective innervation.

Further evidence of the influence of the sympathetic nerves on megacolon is shown by the diagnostic procedure of Scott and Morton,¹⁴ who demonstrated by fluoroscopy and roentgenography that a pronounced increase in peristalsis occurs in cases of Hirschsprung's disease when the sympathetic nerves were paralyzed by a spinal anesthetic agent. They did not explain the effect of the spinal anesthetic agent on the caudal parasympathetic nerves.

Adamson and Aird⁴ produced experimental megacolon in five cats by severance of the parasympathetic nerves, which permits the inhibiting and relaxing sympathetic nerves to act unopposed.

Burrows¹⁵ produced dilation of the cecum in rats following injections of crystalline silica into the mesentery of the cecum. He suggested that this was the result of constant stimulation of the sympathetic nerves.

On the other hand, it is difficult to explain the tremendous hypertrophy of the musculature of the colon and the visible peristaltic waves seen in some cases, on the basis of the neurogenic theory. One would expect an atrophy and an absence of peristalsis if the neurogenic hypotheses were correct. Furthermore, spasm of the internal sphincter cannot be demonstrated in most cases, and inability of the spincter to relax, or paralysis of a segment of the intestine, has not been observed in many cases.

However, the neurogenic theory has been most widely accepted and the present surgical treatment is based on this hypothesis.

TREATMENT

Medical treatment consists in the use of enemas, rectal tubes, massage, diathermy, exercise, diet, and mild cathartics or lubricants, such as mineral oil or milk of magnesia. Hurst⁶ reported cures in a number of cases by frequent dilation of the internal sphincter with a rectal bougie and the passage of a tube high up into the rectum. Most authorities, however, agree that medical treatment is unsatisfactory.

Prior to 1927, the surgical treatment consisted of enter-anastomosis, ilio-sigmoidostomy, cecostomy, colostomy, resection and exteriorization. However, the mortality was excessively high; 48 per cent of 44 patients in the cases reported by Finney¹ died following these surgical procedures.

In 1927, Wade and Royle¹⁶ reported a method of treating Hirschsprung's disease by lumbar ramisection and ganglionectomy of the first and second lumbar ganglia on the left side, with good results. Shortly thereafter (1928), Judd and Adson¹⁷ reported excellent results in the treatment of the condition with bilateral ganglionectomy and ramisection of the second, third and fourth lumbar nerves.

Rankin and Learmonth³ resected the inferior mesenteric nerves and the presacral nerve. Good results have been reported following all of these operations. However, the operations which have been described destroy the sympathetic innervation of the feet, paralyze the mechanism of ejection of seminal and prostatic fluid, and decrease the urinary filling mechanism of the bladder.¹⁸

REPORT OF CASE

An Irish water spaniel, approximately five years old, which weighed 32.5 kg, was first seen by us on March 1, 1935. The dog had been housebroken, but had been allowed to run free at all times. Approximately three weeks before, the owner had noticed that the dog had attempted to defecate very frequently but had passed only a little watery mucus. The owner had diagnosed the condition as a diarrhea, and had administered medicine for the



FIG. 1. The first roentgenogram. There is evidence of the presence of a soft mass and gas in the intestine.

condition but this had failed to relieve the symptoms. He had noticed that for some time the dog had seemed listless, tired easily, and would lie down whenever possible. Since the dog had been allowed to run loose, the owner could not give any definite history concerning defecation prior to the time he had noticed the frequent straining without resultant defecation.

On examination, the dog appeared to be listless, but not acutely ill. The temperature was 102.6°F. The mouth showed some congestion, as seen in gastro-intestinal disease. Inspection revealed that the abdomen was moderately distended. On palpation a large doughy mass (15 x 10 x 6 cm) was felt; this was not tender, extended the length of the abdomen, and apparently filled the ab-

domen fairly well. The mass was slightly movable. Roentgenologic examination disclosed the shadow of a soft mass (fig. 1), which apparently contained some calcified material and which filled a great part of the abdomen. There also was considerable gas present in the intestine.

A diagnosis of an abdominal tumor of undetermined nature was made, and an exploratory laparotomy was performed under ether anesthesia. On opening the peritoneum, a hugely dilated colon, with greatly thickened walls, was found. Two large fecaliths

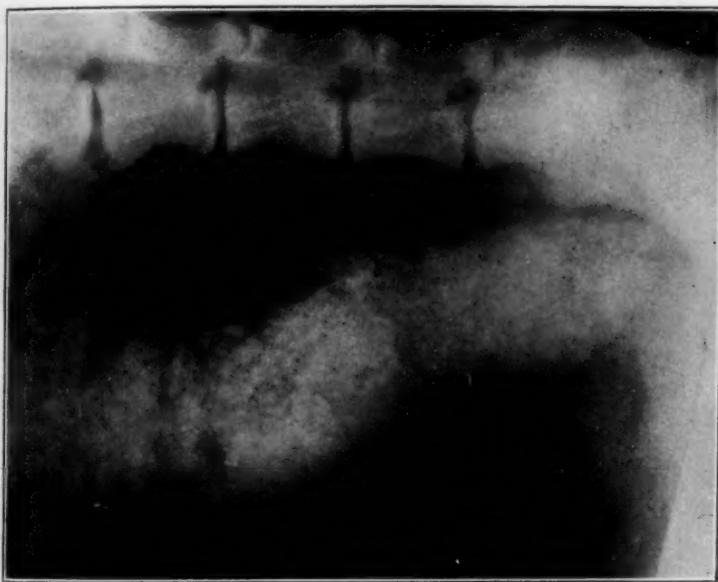


FIG. 2. The second roentgenogram, made about a month after surgical removal of fecaliths. The colon was again filled with calcified feces.

measuring 8 x 15 cm were palpated in the descending colon. The walls of the colon resembled a gravid uterus, so hypertrophied were the muscular coats. Dilated blood-vessels formed a thick network over the colon. The fecaliths were broken up manually without opening the intestine. The abdomen was closed in the usual manner.

A few hours later, when the dog had recovered from the anesthesia, repeated enemas of warm water were given. Two liters of water could be given at a time under a pressure of 30 cm of water, without discomfort to the animal. These enemas resulted in expulsion of the fecal masses. The dog was then permitted to return home.

On April 4, 1935, the dog was again examined by us. The roentgenogram at this time (fig. 2) showed that the condition had recurred. The dilated colon, which was filled with calcified feces, could be palpated easily. The dog escaped, and an effort which was made to catch him resulted in running him for a considerable distance. When he was caught, it was found that the colon had partially emptied itself spontaneously.

It was thought that exercise might help to correct the condition, and the dog was raced frequently beside a car during the



FIG. 3. The third roentgenogram. Although an attempt had been made to help the dog to empty his own colon, by inducing him to follow a car at a run, the shadow of calcified feces in the colon is evident.

ensuing month, with no effective results, for by the end of three weeks the descending colon again had become filled with calcified feces (fig. 3). He was then treated medically and the colon was emptied.

From these and subsequent observations, we feel certain that this dog had true idiopathic megacolon (Hirschsprung's disease).

COMMENT

The existence of megacolon in a dog was proved by roentgenologic examination and laparotomy. That this is a case of true Hirschsprung's disease seems undeniable, since no strictures or

tumors of this colon were observed or palpated at operation. There was no spasm or stricture of the sphincter ani, since a stomach tube 1.5 cm in diameter could be inserted easily; in fact, the sphincters seemed slightly relaxed, if anything.

The part played by the housebreaking of the dog in the production of the megacolon is of an unknown nature. We are inclined to believe that it had little if anything to do with it, since most housebroken dogs do not disclose any evidence of megacolon.

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Few things are impossible to diligence and skill.—SAMUEL JOHNSON.

DEMODEX FOLLICULORUM (CANIS), ITS DIAGNOSIS AND TREATMENT*

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Follicular mange of dogs, also referred to as demodectic or red mange, is a parasitic disease of the skin, caused by the mite, *Demodex folliculorum (canis)*. This disease for many years has presented a perplexing problem to veterinarians. The phases which we propose to discuss are diagnosis and treatment. We will first consider diagnosis, which may well be divided into two classes: clinical and microscopic.

CLINICAL DIAGNOSIS

In order to obtain a history of each case, we ask the client the following questions:

1. Breed, sex and age of the dog.
2. When were skin lesions first noticed?
3. Do you know the skin history of the sire, dam and other members of the litter?
4. Has the dog had distemper or other contagious diseases?
5. Has the dog had frequent attacks of intestinal parasites?
6. What has been the diet for the past three or four months?

When the history has been carefully recorded, we are ready to consider the general appearance. Compare the patient's size, weight and flesh with that of a normal dog of the same age and breed. Next, consider the coat. Is the hair normal or is it dry, brittle and falling in localized or general areas?

THE SKIN

In the squamous form, the skin may show only a mild inflammatory process with the hair falling from localized areas. The skin may be dry and slightly red with a mild desquamation of the epithelium. This type of lesion is frequently mistaken for scratches, rubbed areas or other minor injuries. In such cases a diagnosis should be withheld until a microscopic examination of skin scrapings has been made.

The pustular type of lesion is more commonly observed in cases complicated with marked secondary infections. The skin is frequently thickened, the vesicles and pustules exuding pus and blood. The skin becomes badly wrinkled and loose, resembling that of an elephant. There is also a low-grade type, in which the skin shows a chronic indurative inflammatory process.

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The mouse-like odor emanating from the skin is very characteristic. The client frequently mentions this. We feel that this is a material aid in making a diagnosis, being especially helpful when it is difficult to demonstrate the presence of the parasite upon microscopic examination.

It is apparent from the standpoint of clinical diagnosis, that patients may exhibit a wide range of lesions. These vary from the simple squamous type, with the loss of but a few hairs around or above one eye, to the generalized pustular bleeding cases, where the dog is so debilitated he can hardly stand. Follicular mange must not be confused with eczema, ring worm or any of numerous other skin diseases, including sarcoptic mange.

MICROSCOPIC DIAGNOSIS

When a thorough clinical examination has been completed, we are ready for a microscopic study of skin scrapings. The equipment necessary for this work, as recommended by Benbrook,¹ includes:

1. Paraffin oil.
2. Microscope slides (3 x 1 inch).
3. Micro cover-glasses ($\frac{3}{4}$ inch square).
4. Small forceps for handling cover-glasses.
5. Scalpel or other scraper.
6. Alcohol lamp or gas burner.
7. Microscope equipped with high- and low-power dry lenses giving magnifications of approximately 100 to 400 diameters.

Technic: Benbrook suggests the following procedure:

1. Sterilize the scalpel or other scraper in an alcohol or gas flame. Cool by dipping into water. Dry.
2. Place a drop of paraffin oil in the center of a microscope slide.
3. Dip the scalpel in the paraffin oil drop. (An oily scraper will pick up a specimen more easily than will a dry scraper.)
4. Pinch a fold of skin showing lesions between the thumb and forefinger and scrape the crest of the fold with oily scalpel blade until lymph begins to ooze. Avoid drawing gross blood.
5. Transfer the scraping from the scalpel to the drop of oil on the slide.
6. Apply a micro cover-glass to the drop with the aid of forceps.
7. Systematically examine the material under the cover-glass, using the low power of the microscope and rather low illumination. The oil renders the skin scales transparent and parasites

appear rather prominently. Mites may live for several days in such a preparation. In some cases, several scrapings may be necessary in order to find mites.

At this point we wish to emphasize the importance of Dr. Benbrook's last statement. Do not depend on a single scraping for your diagnosis. It is frequently necessary to make several scrapings before any mites are found.

Our observation has been that untreated cases are easily diagnosed microscopically. Those which have been under treatment for a period of time are often more difficult. In some instances we have made 15 or 20 slides from different parts of the body before being able to demonstrate the presence of the mites. In some dogs we are unable to find the mites in skin scrapings. In such instances we always make a careful fecal examination, as the mites are sometimes found in the stool. In some of these cases, if a positive diagnosis is absolutely necessary, a small section of skin may be removed under local anesthesia and biopsy studies of the skin may reveal the mites.

When examining the scrapings, it is essential to observe them very carefully. In certain instances only the abdomen or the thorax of a single parasite may be found. Sometimes the immature parasites may be present. A tedious search may reveal only a single adult. Positive scrapings are simple. Negative scrapings from cases showing definite clinical evidence of follicular mange are occasionally experienced. We do not consider it advisable to institute treatment until a definite diagnosis has been made.

Complicated cases: Dogs with follicular mange are frequently infested with other parasites. In New Jersey, the more common ones are ascarids, hookworms, whipworms, tapeworms and filaria. Dogs that have recently recovered from any debilitating disease, particularly distemper, frequently develop follicular mange. It must be definitely borne in mind that satisfactory results can be obtained only when the physical condition of the dog is known.

PREPARATION OF PATIENTS

We seldom clip a short-coated dog. The dog should be bathed, if necessary, to remove scales, vermin, dirt, and so forth. Dry thoroughly.

Long-coated dogs should be clipped, bathed and dried. In certain instances where only a few, small, localized areas appear on the head or feet, clipping of the entire body is not necessary. It is well to explain to the owner, however, the possibility of lesions that may escape notice on the unclipped and untreated portions of the body.

If necessary, treat the patient for intestinal parasites and remove other complicating factors prior to instituting treatment for mange, particularly if the dog is malnourished and in poor physical condition. If the patient is extremely weak and debilitated, it may be expedient to administer preliminary treatment prior to making any applications to the skin.

FORMER METHODS OF TREATMENT

After reading the literature and talking with a number of colleagues, it is evident that almost every known parasiticide has been tried. Those producing results generally required a long series of treatments, discouraging to the client as well as the veterinarian.

Recently, Millenbruck² has suggested the use of fetal extracts. Non-specific protein therapy also has been suggested as another method of control.

In 1933, Crane³ reported on the use of a rotenone-acetone-alcohol solution. Inasmuch as our experience with the usual treatments recommended had not been satisfactory or uniform, we contacted the Research Laboratories of Merck and Company, Inc., in reference to the solution recommended by Crane. Investigation revealed the fact that this solution was not stable, as the rotenone did not remain in solution. Several solutions were furnished us and we used them with varying results. After trying about 15 different mixtures, we finally found one which seemed to give uniformly good results, and which is designated as Solution 34AR348. This is a special oil solution containing rotenone, developed by Merck and Company.

When we found we were getting consistent results, we mentioned it to several other veterinarians, including Dr. D. A. Eastman, who made a preliminary report⁴ at the American Animal Hospital Association meeting at Chicago, in April, 1935. Eastman's results paralleled ours. We then suggested to Merck and Company that other practitioners might be furnished with material for clinical trial. In accordance with this suggestion, samples of this material were sent, with blanks for detailed case reports.

In preparing this paper, it was our thought that a summary of as many case reports as possible would present a more complete picture than one based upon our cases alone. These summaries were compiled and furnished us through the courtesy of Merck and Company, with the following statement:

Samples of Solution 34AR348 have been sent to 76 veterinarians in different parts of the United States. From the clinical reports

TABLE I—*Geographical area covered and number of veterinarians reporting.*

STATE	VETERINARIANS	CASE REPORTS
New York.....	6	11
New Jersey.....	2	26
Maryland.....	1	5
Pennsylvania.....	1	1
Ohio.....	2	10
Illinois.....	3	18
Iowa.....	2	3
Minnesota.....	1	1
Missouri.....	1	5
Oklahoma.....	1	1
Florida.....	2	3
California.....	2	2
Totals.....	24	86

received, we selected only those on follicular mange and only those which were complete. We received many on sarcoptic mange, etc., and many which could not be used because of supplementary treatment, lack of microscopic diagnosis or records otherwise incomplete.

Included in this summary are the cases treated at our hospital. Table I shows reports on 86 cases from 24 veterinarians in twelve states. This indicates the geographic distribution of the veterinarians furnishing these reports.

TABLE II—*Summary by breed and sex.*

BREED	MALE	FEMALE	TOTAL
Boston terrier.....	18	11	29
Dachshund.....	6	10	16
Bull terrier.....	5	0	5
English bull dog.....	2	1	3
Fox Terrier.....	7	2	9
Scotch terrier.....	4	0	4
Irish terrier.....	1	0	1
Whippet.....	0	1	1
Beagle.....	0	1	1
Great Dane.....	1	1	2
Chihuahua.....	0	1	1
Sealyham.....	0	1	1
Irish setter.....	1	1	2
Cocker spaniel.....	4	1	5
Newfoundland.....	1	0	1
Collie.....	1	2	3
Mongrel.....	1	1	2
Totals.....	52	34	86

Table II presents interesting data relative to breed and sex, Boston terriers comprising approximately one-third of the total of 86 dogs treated, representing 17 breeds.

From the standpoint of diagnosis and pathogenesis, it is interesting to note that long-haired dogs make up less than 14 per cent of this group. The theory has been advanced that follicular mange develops as a result of a nutritional deficiency or lowered skin resistance. If this is the case, we should expect it to be equally prevalent in long-haired and short-haired dogs. Since this survey covers but 86 dogs, the evidence is only suggestive.

TABLE III—*Summary by ages and percentage of skin area involved.*

AGE	DOGS	LESS THAN 25%	25% TO 50%	50% TO 75%	75% TO 100%
Under 6 months.....	16	9	2	3	2
6 to 12 months.....	37	16	1	7	13
12 to 18 months.....	14	7	3	2	2
18 to 24 months.....	4	2	1	0	1
Over 2 years.....	15	8	0	4	3
Totals.....	86	42	7	16	21

Table III presents the summary by age and percentage of skin area affected. This reveals the fact that approximately 60 per cent were under one year of age. Approximately 17 per cent were over two years. Almost 50 per cent had less than 25 per cent of the skin area involved, but over 24 per cent were generalized cases with 75 to 100 per cent of the skin area affected.

These data are significant from the standpoint of diagnosis. Apparently a majority of the cases of follicular mange occur in dogs under one year of age, when the resistance of the dog is lowered as a result of teething, internal parasites and infectious diseases.

METHODS OF TREATMENT

Hospitalized patients: Treatment should not be commenced until the physical condition of the dog is known. We always hospitalize patients if possible, as this permits us to make continuous observations. In such cases, Solution 34AR348 may be applied daily to portions of the skin, or the entire surface if the physical condition of the dog will permit. We always treat the entire skin surface at least once, the only exception being unclipped, long-coated dogs with a few lesions on the head or feet.

The base of this solution being an oil, the same precautions regarding applications should be followed as with any bland oil. If the dog is in poor physical condition, with a history of vomiting or dysentery, we withhold treatment until the physical condition of the patient has been corrected and then treat only a small portion of the body at a time to determine tolerance.

We have found it comparatively safe to apply the solution to the entire body surface of dogs in good physical condition, although this is not a routine practice with us. Our method of application is the same as that described by Eastman.⁴

The preparation is thoroughly massaged either into and completely around the infested areas, or, if the case demands, over the entire body. Thorough and almost rough massage appears to hasten improvement. Care should be taken to prevent any of the preparation reaching the conjunctival membrane or the cornea.

We do not find the use of a brush advisable and apply it by hand. We keep carefully compiled daily records on each case. If the dog refuses food, stool becomes loose, vomits, or appears depressed, we do not repeat applications until the patient is normal again. We find the tolerance variable, although the solution apparently is not toxic. In hospitalized cases we have treated dogs for distemper and simultaneously used this solution on the skin with satisfactory results. We have also treated dogs for filaria and follicular mange at the same time. Patients infested with intestinal parasites and mange may be treated simultaneously except in very delicate dogs.

If the owner is not willing to hospitalize the dog for the full course of the treatment, we try to keep it from 10 to 14 days and treat the affected areas daily, or as required. We discharge such a patient unbathed and instruct the owner to return the dog in one week or less, depending upon the conditions. In this manner we can follow the case until recovery is complete.

Out-patients: When patients cannot be hospitalized we treat the dog at the hospital and require the owner to return the dog every three to six days for observation and further treatment. Our experience in dispensing this material for home application has not been satisfactory. For example, we dispensed material for two Boston terriers that were treated at home by the owner for three or four weeks and the dogs were getting gradually worse. We then hospitalized these dogs, applied some of the same solution and obtained a rapid recovery in three weeks. Observation sixty days after they were discharged revealed the skins and coats in normal condition and scrapings were negative. When the owner insists on home treatment we dispense the material, assume no responsibility and give a guarded prognosis.

FREQUENCY OF TREATMENTS

From our experience, each case must be handled individually, the veterinarian's judgment being the best guide. Specific directions are impossible.

We have been able to control follicular mange in all our patients by this method with but two exceptions. One was a Boston terrier with a chronic case that had been treated elsewhere for over a year. On entry, our examination revealed a kidney and liver involvement. Against our better judgment we treated the skin. The patient died about a week later. The other case, also a Boston terrier, with a chronic case of long duration, apparently made a complete recovery. He was returned five months later, exhibiting several small lesions. Whether this was a recurrence of the original infestation or the dog became reinfested from another source is unknown. To the best of our knowledge, this is the only case treated with this material in which we have had an apparent recurrence, although we have used this method of treatment for about two years.

SUMMARY

Clinical diagnosis should be supplemented by microscopic studies of skin scrapings. The physical condition should be ascertained to detect the presence of complicating factors.

Treatment has consisted of the use of a special oil solution containing rotenone, applied by massage to the skin of dogs for the control of follicular mange.

Clinical reports from 24 veterinarians in twelve states on 86 cases of follicular mange in dogs indicate that: (1) the incidence of the disease is widespread; (2) the disease is more prevalent among short-coated dogs; (3) the greatest incidence is among dogs under one year of age but older dogs are susceptible; and (4) of 86 cases, 84 were reported as complete recoveries, two were failures and one reported as recovered has recently shown lesions.

The clinical results as indicated by this investigation suggest that solution 34AR348 is an effective external treatment for follicular mange in dogs.

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THE DIAGNOSIS OF MASTITIS*

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Mastitis has become a major problem in the dairy industry. The disease results in a tremendous loss in adult cattle through condemnation and the production of milk unfit for human consumption. Boards of health are maintaining rigid inspection with respect to mastitis, in an effort to eliminate the danger of milk-borne septic sore throat in man.

Rosell¹ has reported that 57,190 cows with mastitis are eliminated annually in New York State and that the combined loss of cows and milk totals approximately 49 million dollars a year. It has been estimated that the losses from mastitis exceed those of either tuberculosis or Bang's disease. Germany and Austria have calculated that their economic loss due to streptococcal mastitis is approximately one-third of their annual milk production. Steck² states that a latent infection is present in the udders of all apparently normal milk cows.

It is generally accepted that streptococci are among the principal etiological agents in mastitis. Other organisms such as staphylococci, *E. coli* and *B. pyogenes* are also frequent factors.

Two forms of mastitis are generally recognized, acute and chronic. Acute cases of mastitis are usually accompanied by loss of appetite, rough hair-coat, fever, with congestion, redness, tenderness, and swelling of the gland. One or more quarters may be affected with usually almost complete cessation of milk-flow. Milk that can be obtained is watery, flaky, or stringy. Necrosis of the teats or gland occasionally results. Chronic mastitis is characterized by areas of induration, asymmetry and, in some cases, occasional periods of acute stages.

The diagnosis of mastitis has depended largely upon physical alterations of the gland and milk. The federal government³ is using the physical examination at the present time as the basis of diagnosis and elimination of the disease from dairy herds. Bacteriological examinations are of limited value because they require extensive laboratory equipment and training.

Practical and simple field tests which are based in most instances on the pH of the milk have been developed as a means of diagnosis. Among the most promising of these are the brom-

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cresol purple, bromthymol blue, chlorine, catalase, and rennet tests.

Prophylactic measures have been confined principally to isolation and elimination of clinical cases, with rigid sanitation, in order to prevent the spread of infection. Autogenous vaccines, various dyes and other preparations, have been used for treatment, but have been in the main unsatisfactory.

In order to determine the comparative value of the principal tests recommended for the diagnosis of mastitis and the practicability of carrier elimination, based on the results found, the following experiments were carried out.

The dairy herd at Virginia Polytechnic Institute was used for the experiment. Most of the animals were apparently normal. Some had clinical mastitis or developed it during the progress of the experiment; others had apparently recovered from previous attacks. The animals, therefore, represented fairly typical conditions found in most large commercial dairy herds. All the tests used were made at the same time on each animal and the results compared. Final determination of the disposition of the animals was based on these results.

1. *Physical examination:* The physical examinations were made by the senior author. The technic employed and the final grading of individuals was made in accordance with the methods used by federal inspectors working on mastitis control. Each quarter of the mammary gland was examined by manual manipulation. The symmetry of the gland and the presence or absence of induration or fibrosis was noted. The consistency, size and weight of the quarters were compared.

Out of a total of 200 quarters examined, 33 (16.5 per cent) were found to be abnormal. Each quarter was recorded as normal 1+, 2+, 3+ or 4+, depending upon the degree of palpable abnormality. Those animals with normal or No. 1 quarters were retained in the herd, and those with No. 2 quarters were placed at the end of the milking line. Those with No. 3 or No. 4 quarters were isolated in a separate barn.

2. *Strip-cup:* The strip-cup was first developed by Moak⁴ as a means of detecting infected quarters and is used by most commercial dairymen. It consists essentially of a metal container over which a 100- to 120-mesh wire screen has been incorporated within a concave cover. Black cloth is sometimes used instead of wire mesh. Clots or flakes in the milk are caught in the mesh of the wire or cloth, where they can be readily noted. Clots or flakes were noted in 17 of 200 quarters examined (8.5 per cent).

3. *Bromcresol purple*: This test was recommended by Jensen⁵ as more accurate and less expensive than bromthymol blue. Whatman ashless No. 40 filter paper, impregnated with bromcresol purple dye (0.1 gram of the powder dissolved in 100 cc of distilled water) was used. When dried at low temperature this impregnated paper has a Jersey-yellow color. The paper was cut in strips, 1½ by ½ inch and stored ready for use. In using them, two or three drops of milk from the end of the teat was placed on the paper strip and the results read immediately. A greyish tan color indicates a normal quarter and a deep purple a diseased quarter. Varying degrees of purple are judged as partial or slight reactions. The reactions are graded 1+, 2+, 3+ or 4+, depending upon the degree of color change. The paper strips can be stored for future reference. If done in the barn, the test should be conducted on dry days, as a damp barn atmosphere affects the paper.

Of a total of 200 quarters examined 45 (22.5 per cent) were positive, 66 (33 per cent) were partial, and 89 (44.5 per cent) were negative.

4. *Chlorine*: Rosell⁶ stated that the chlorine test discloses abnormalities in the glandular tissues with a high degree of accuracy, and that an increase in chlorine is caused by an inflammatory exudation of serum from the blood. Hucker⁷ stated that fibrotic quarters usually secrete milk containing more than 0.14 per cent chlorides, and the presence of this fibrosis probably indicates past or present infection. More than 0.14 per cent chlorine is indicative of an infection.

An abbreviated method of determining the percentages of chlorine in milk⁸ was suggested by Hayden.⁸ Five cubic centimeters of silver nitrate solution (1.3415 grams of silver nitrate in one liter of water) was measured into a test-tube. Two drops of a 10 per cent potassium chromate solution were added, which produced a brick-red color. One cubic centimeter of the milk to be tested was added to the chromate solution. This is a quantitative test and is so adjusted that a yellow color develops in the mixture if the concentration of the chlorides is greater than 0.14 per cent. The test was graded 1+, 2+, 3+ or 4+, according to the degree of reaction.

Out of a total of 194 quarters tested, 124 (64 per cent) were positive; 42, (21.7 per cent) were slight or partial, and 28 (14.3 per cent) were negative.

5. *Catalase*: Rosell and Miller⁹ stated that catalase ranks next to chlorine in efficiency in detecting infection. Infection in the mammary gland is accompanied by an increase in leukocytes

and proliferation of epithelial cells. This test¹⁰ is based on the fact that cellular tissue contains a certain amount of catalase which breaks down hydrogen peroxide to hydrogen and water. The test then becomes a rough index as to the number of cells contained in the milk. Ordinary glass slides were painted on one side with black enamel paint. A large drop of the sample to be tested was placed on the mirror surface of the black slide, and one drop of 10 per cent watery solution of hydrogen peroxide was added. Infected quarters were noted by the appearance of bubbles in the drop. To aid the detection of bubbles, a reading glass was used. This test was graded 1+, 2+, 3+ or 4+, according to the degree of reaction.

Of a total of 200 quarters tested, 39 (19.5 per cent) were positive; 100 (50 per cent) showed a slight or partial degree of reaction, and 61 (30.5 per cent) were negative.

6. *Hydrogen-ion concentration:* Bryan¹¹ stated that there were normal physiological factors that are responsible for the variation in the pH of freshly drawn milk. It has been found by a number of investigators that an alkaline reaction in milk nearly always indicates an abnormal quarter, although normal pH (6.3-6.6) does not necessarily indicate a normal gland. The pH of freshly drawn milk was determined by use of a Hellige hydrogen-ion comparator. A number of samples were checked by a Leeds and Northrup type K potentiometer, to determine the accuracy of the readings by the colorimetric method. The colorimetric method was found to be reasonably accurate. Brom-thymol blue (0.5 cc) was used as an indicator, in 9.5 cc of neutral distilled water, to which was added 0.5 cc of the sample to be tested.

Out of a total of 200 quarters examined, 16 (8 per cent) were found to be more alkaline than 6.8. The remainder were within the range generally considered normal.

7. *Rennet:* The rennet test for the detection of mastitis was developed by Hadley.¹² This test is reliable only when applied to individual samples of fresh milk. The test is based on the fact that abnormal milk does not coagulate readily with rennet. This may be due to the fact that the optimum hydrogen-ion concentration is about pH 6.0. As pH 7.0 is approached, a measurable destruction of the enzymes occurs rather suddenly.¹³ The optimum temperature for rennet action is 40 to 42° C. A solution of rennet was prepared by mixing one part of fresh cheesemaker's rennet to 50 parts of distilled water. One-tenth cc of the solution was added to 10 cc of the freshly drawn sample. Thus the final dilution was 1:5,000. The mixture was thoroughly shaken and

allowed to stand at room temperature for one hour. Within this period normal milk will coagulate. All milk which coagulated within the 60-minute period was considered to be normal. Milk which did not coagulate within the hour or on prolonged standing was considered to be abnormal.

Of 200 quarters examined, 18 (9 per cent) did not coagulate and were considered abnormal.

8. *Bacteriological examination:* Bacteria counts were made with each sample of milk using the agar plate and agar slant methods. Standard methods of technic were used. In case streptococci were isolated, blood-agar plates and veal infusion broth were inoculated to determine the type and length of the chains.

Of 200 quarters examined, streptococci were isolated from 34 quarters of 21 cows. Long-chain streptococci were isolated from one of the cows following an attack of acute mastitis, which was fatal. The remainder were short-chain viridans type. Hemolytic streptococci were not isolated from any of the samples.

DISCUSSION

A comparison of the results obtained with all the tests, using identical milk samples, revealed that there was considerable variation.

Apparently normal quarters: A majority of the samples of milk tested were from quarters which were apparently normal. The results would indicate that there are, in a strict sense, few normal mammary glands. The results further indicate that any one test might be misleading when used alone. Chlorine and catalase appeared to be especially sensitive, many samples being classified as 2+, 3+ or 4+, when all the other tests were negative. The bacteria count varied, high counts being obtained in some samples, which are difficult to explain. The physical examination, strip-cup, bromcresol purple, and rennet tests appear to be the least misleading.

Atropic glands: Twenty-one quarters were shrunken or weak as the result of some previous condition, but were negative to the strip-cup test. Some induration and fibrosis could be detected with the physical examination, and most of them were graded as 3+ or 4+, with bromcresol purple, chlorine and catalase. The pH within the range of normal, rennet negative and, in most cases, the bacteriological examination was inconclusive. Physical examination, bromcresol purple, chlorine, and catalase are useful in indicating chronic conditions in which there is an increase of fibrosis at the expense of secreting cells. The strip-cup, pH, rennet, and bacteriological examinations were of little or no value.

Chronic mastitis: Six cows were classified as chronic cases in that their history had indicated occasional acute periods, but at the time the tests were made, they were apparently normal, as judged by the physical characteristics of the milk and lack of acute symptoms. In all the quarters classified as chronic and indurated, a nodular condition was found with the physical examination; the strip-cup was positive with two quarters; bromcresol purple was positive in all but one; and chlorine and catalase were positive in every case. The pH and rennet tests remained within the range of normal; the bacteria count was inconclusive, except in the case of the two quarters which were positive with the strip-cup. In both of these quarters, the bacteria count was above 10,000. Short-chain streptococci, viridans type, *Staphylococcus albus* and *S. aureus* were isolated from part of the quarters classified as chronic.

Acute mastitis: Ten quarters were classified as acute mastitis. In these the gland was hot, tender and swollen, and the milk was so altered in its physical characteristics that a strip-cup was hardly necessary. Bromcresol purple, chlorine and catalase reacted as 4+ in almost every case. With six quarters the pH ranged from 6.8 to 7.4, the remainder being below 6.8. The rennet test was consistently positive, no coagulation occurring within an hour. The bacteriological results were, in the main, consistent, the bacteria count varying, as a rule, from 10,000 to 50,000. One cow developed acute mastitis in two quarters, with necrosis, which was fatal in about 48 hours. Long-chain streptococci, viridans type, were isolated from this animal.

SUMMARY

Physical examination, when made by an experienced veterinarian, compares very favorably with the other methods of diagnosis. Bromcresol purple-impregnated paper is especially valuable to the veterinarian used in conjunction with the physical examination. No laboratory equipment is necessary and decisions as to disposition of the animal can be made immediately. Animals showing 2+ or 3+ reactions with bromcresol purple and minor lesions or no apparent lesions with physical examinations, could be noted for a future examination.

The strip-cup and rennet tests are simple and reliable for use by the dairyman.

Chlorine and catalase are too sensitive and should be used only as a laboratory procedure.

The pH of the milk is not reliable as a diagnostic agent for mastitis.

The bacteriological examination is a laboratory procedure. It is particularly applicable to board of health work and research, but too complicated and expensive for routine mastitis control.

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United States Civil Service Examination

The United States Civil Service Commission announces the following open competitive examination:

JUNIOR VETERINARIAN

Applications for this examination must be on file with the United States Civil Service Commission at Washington, D. C., not later than April 13, 1936. This examination is to fill vacancies in the Bureau of Animal Industry, U. S. Department of Agriculture, at a salary of \$2,000 a year, which is subject to a deduction of 3½ per cent toward a retirement annuity.

Applicants must have been graduated from a veterinary college of recognized standing, or be senior students in such an institution, and furnish proof of graduation, before active duty can be assumed, even though certification has been previously given.

Competitors will be rated on veterinary anatomy, physiology and pathology, meat inspection, and theory and practice of veterinary medicine.

Full information and application blanks may be obtained from the United States Civil Service Commission, Washington, D. C.; from the secretary of the Board of U. S. Civil Service Examiners, at any first-class post office, or from any United States Civil Service district office.

AN OUTBREAK OF ACUTE SWINE ERYSIPELAS INFECTION IN TURKEYS*

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The owner of a flock of about 500 turkeys near Annandale, Hunterdon County, New Jersey, presented one live and three dead birds for examination on November 14, 1934. In each case the autopsy findings were strikingly similar and cultures taken from three of the birds yielded the same organism. In stained preparations the slender Gram-positive rods were grouped in interlacing bundles characteristic of the swine erysipelas bacillus. On further study, the organism could not be differentiated from the swine erysipelas or rotlauf bacillus.

A review of the literature shows that rotlauf infection has been reported in several species of birds. The first case was encountered by Jarosch,¹ in October, 1904, in Lemberg, and involved a turkey that had died after an illness of less than a day. It showed subepicardial hemorrhages, enlargement of the spleen and a hemorrhagic inflammation of the duodenum. The isolated organism was morphologically similar to the rotlauf bacillus and was pathogenic for pigeons by subcutaneous inoculation but not for chickens or ducks. Mice and rabbits also were infected. The disease was reproduced in a turkey by subcutaneous inoculation of heart-blood from an infected rabbit, and the autopsy showed changes similar to those found in the original case. Jarosch thought that the disease might have been produced through wound infection.

In 1909, Hausser² reported on the isolation of an organism from the diphtheritic exudates of each of three chickens. Each strain was pathogenic for mice and mice were protected by a known rotlauf serum. One pigeon died in four days after subcutaneous inoculation of 2 loopfuls of a 24-hour culture, and another died in three days after 0.25 cc of culture was inoculated submucously near the tongue. Hausser considered the organism only as a secondary invader and not responsible for the diphtheritic lesions in the original birds.

In two papers in 1910, Schipp³⁻⁴ gave the results of his exhaustive studies on an organism isolated by him from a chicken on May 22, 1907. Only one chicken was examined, but it was

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said to have come from a flock in which a large number had died in a relatively short time. The specimen showed enteritis and parenchymatous degeneration of the heart muscle. The organism was recovered from the heart-blood, organs and intestinal contents. It could not be distinguished from a genuine rotlauf bacillus on the basis of morphological or cultural studies. White mice died in two to four days and gray mice in six days after inoculation but field mice not at all. Pigeons died on the third day after inoculation; a pig was resistant but rabbits died in an emaciated condition on the seventh day. In preliminary attempts, chickens could not be affected. However, one young bird died four days after an intraperitoneal injection of 2 cc of culture. Finally, the resistance of chickens was broken down by the effect of poor environmental conditions and intraperitoneal injections of defibrinated sheep blood or ink, so that 2 cc of culture subcutaneously proved lethal. Through similar means rotlauf strains also proved pathogenic for chickens but killed them only after 14 days, as compared with seven for the organism originating in chickens. In cross-agglutination tests and in protective tests in mice the chicken organism could not be distinguished from the rotlauf bacillus.

In 1911, Broll⁵ reported his findings on the organism isolated from a single chicken examined in an outbreak that caused the loss of an entire flock in the course of a few weeks. In this case the chickens did not eat, allowed their wings to hang down and died after an illness of from two to 30 hours. Autopsy showed subepicardial hemorrhages, clouding of the parenchymatous organs and hemorrhagic inflammation of the intestine. The blood and organ smears showed a Gram-positive rod, which was found to be pathogenic for pigeons, gray and white mice, and rabbits. Guinea pigs were immune. An inoculated chicken showed an illness that subsided after three days. The organism was culturally identical with a genuine rotlauf strain and rotlauf serum protected mice in inoculation tests. An immune rotlauf serum agglutinated the chicken bacillus to the titre limit. The author considers the chicken bacillus identical with the rotlauf bacillus, but more virulent than the latter.

In 1917, Poels⁶ described rotlauf infection in two pigeons and four ducks originating in two different places. The pigeons had been reared on the farm from which they were received and so were assumed to have become infected there spontaneously. The ducks came from Vollenhove in Overijssel near the Zuider Zee, and had been fed decomposed prawn shells according to Buchli who investigated the farm. Seventy ducks died and from the

four sent in Van Straaten recovered the organism. Since the outbreak took place during November and December, Poels thought that exposure as well as decomposed food might have been a contributing factor. Infection was thought to have been by way of the digestive tract. On autopsy the pigeons showed reddening and severe capillary congestion in the coronary region of the heart, catarrhal enteritis and parenchymatous degeneration of the organs. The ducks showed similar changes. The organisms isolated from these birds corresponded morphologically and culturally with the swine rotlauf organism. They showed, however, less pronounced "test-tube brush" growth in gelatin and a more branched appearance in broth. In agglutination tests, clumping of a swine culture took place in 20 minutes as compared with two hours for the avian strains. A rotlauf serum was less protective against the avian strain than against swine strains. The organism also possessed greater virulence for mice and pigeons, so that Poels was inclined to consider these avian strains more closely related to saprophytic forms. An inoculated duck failed to take the disease.

The cases reported by Jármai,⁷ in 1919, came from the Budapest zoo. These concerned a coot with catarrhal enteritis, a quail that showed no changes, a thrush and a parrot. On the basis of morphological, cultural and biological studies (agglutination), the author considered the strains identical with the swine rotlauf bacillus.

In the years 1919 and 1920, Eber⁸ encountered rotlauf infection three times in 1,300 fowl autopsies. The first case occurred in November, 1919, in ducks in the environs of Leipzig, where they had access to the drainage ditches and puddles in the flood area of the Luppe. In this flock two ducks died suddenly overnight without illness having been observed. The duck sent for examination showed in general the changes previously described by other authors, but Eber is the first one to call attention to hemorrhages in the muscles. The organism isolated was typical of the rotlauf bacillus and a mouse inoculated with heart-blood died in three days. Spleen pulp from this mouse killed a second one two days after subcutaneous inoculation. Morphologically and culturally the organism isolated from the mice was identical with the rotlauf bacillus.

The second case was observed in May, 1920, in a flock of ducks near Magdenburg. These ducks had access to a branch of the Elbe during the day and were confined at night. In successive days a drake and a duck died that were sound the previous evening. The somewhat decomposed duck received for examina-

tion showed the usual changes except for muscle hemorrhages. No isolations or inoculations were made, but Eber does not hesitate to consider the case one of "duck rotlauf" on the basis of microscopic findings.

Eber's third case concerned a hen turkey that died suddenly in October, 1920. It came from the flood area of the Aller. Autopsy showed the usual changes including hemorrhages in the muscles of the breast and leg. From a mouse inoculated with heart-blood and from another mouse inoculated from the first an organism was isolated that corresponded with the previously isolated duck culture as well as with genuine rotlauf bacilli. No further history of the case could be obtained.

In a comparative study that included the two strains from birds and a known rotlauf strain it was established that all grew alike and characteristically in gelatin and broth. The avian strains caused death in white mice in $3\frac{1}{4}$ days on the average, whereas the rotlauf strains killed in four days. Unfortunately, no fowls were inoculated. A rotlauf serum protected mice against a known lethal dose of the avian strains. In agglutination tests, the avian strains differed from rotlauf only in being more slowly agglutinated. Concerning the question of the possible spread of infection to hogs by fowl, Eber points out the rareness of the disease in fowl in areas where it is common in hogs and also the fact that the disease in hogs occurs mainly in the summer while in birds it is seen in fall and spring.

The report of Pfaff,⁹ in 1921, however, indicates that this infection may sometimes be of a chronic nature in chickens. In this case the affected chickens were droopy, lost their appetites and were retarded in growth and developed a diarrhea which ceased after several days. In some, death occurred in a few days; in others only after 14 days to five weeks; none recovered. Young chickens were largely affected so that about 100 died that were from one to three weeks old. In 300 chickens, two to three months old, only 16 died. Ducks were not affected. Pfaff examined ten birds from this plant in a period of ten months. A seven-month-old cockerel showed the most pronounced changes: fibrinous layers on the pleura, lungs edematous and containing necrotic foci, degeneration of the liver, and enlargement of the spleen. The mucous membrane of the esophagus was turbid, rough and partially covered by deposits. The wall of the proventriculus was thickened and adherent to the air-sac and its mucosa ulcerated. Necrotic foci were found in the thickened wall. Some small erosions occurred beneath the cuticula of the ventriculus. There was a catarrhal enteritis and hemorrhages in the posterior

portion of the intestine. The mucosa of the ceca was swollen and hemorrhagic, and interspersed with small yellowish nodules.

Other chickens showed swelling of the mucosa of the proventriculus and intestine, diphtheritic deposits or necrotic nodules in the ceca or necrotic foci in the liver. In younger chickens there was only catarrhal enteritis and swelling of the spleen. The organism was recovered from the heart-blood of the cockerel as well as from the necrotic nodules (especially pure in proventriculus) of various organs. The heart, spleen, liver or kidney of other birds also yielded the organism. Two mice inoculated subcutaneously with an emulsion of material from the stomach wall died in four and five days, respectively. The organism was recovered from these. Larger chickens were resistant to the same material given subcutaneously or fed. Pigeons died in six days after inoculation with heart-blood. Older birds did not react to injections nor did older chickens that were fed organs with or without mustard seed irritation.

With broth cultures the author was able to kill young chickens with doses of 2 to 3 cc given subcutaneously or intraperitoneally. Two older chickens resisted subcutaneous injections of 2 cc. Pigeons died after a dose of 3 cc given subcutaneously or intraperitoneally.

Culturally the organism was identical with swine rotlauf. In reciprocal agglutination and cross-immunity tests the organisms could not be differentiated. However, in infection experiments with young chicks (three weeks old) the avian cultures killed in two days, whereas the swine culture killed only in four days.

Finally, Reinhardt,¹⁰ in Rostock, states that on one occasion he established rotlauf bacilli as the cause of death in a chicken but gives no further details. Elsewhere, Reinhardt¹¹ considers the digestive tract as the possible portal of entry, but suggests that infrequently it may be through an injury.

HISTORY OF OUTBREAK

The farm from which the turkeys came was visited on November 17. The turkeys (originally about 500) were housed in two buildings with wire floors and provided with outside runs on wire floors raised about four feet from the ground. The runs were covered with canvas and one side also could be protected with this in case of need. Feeding troughs and drinking fountains were on the runs. The flock was started by purchasing day-old poult's or hatching eggs at different times, and from different sources. Thus, 30 poult's were hatched on June 10 from 100 eggs set at one place. About June 22, 40 poult's were obtained

from a setting of 200 eggs at another place. Then, from the same place a week later, 60 more turkeys were delivered, but the next day 35 were taken away. A week later, another delivery of 75 was made and still later about 40 or 50 were delivered. Still later, 30 poultts were hatched from a purchase of 100 eggs, and finally 200 poultts were purchased from a third source.

The birds had been reared on wire from the beginning until the oldest birds were turned out on a small enclosed yard in alfalfa. No chickens had been on this ground. After two weeks on range, two suspicious cases of blackhead developed, so the flock was again confined to wire runs. About this time the youngest birds were turned out on ground over which a few sheep had grazed. Blackhead was again suspected and the birds were confined for about three weeks and again turned out daily until complete confinement was begun about November 1. The total loss from all causes was about 10 to 12 birds up to the time of the outbreak in question.

Because of a few suspicious cases of blackhead the whole flock was treated with an iodine preparation on November 10 and 11. By the morning of the 12th, 25 turkeys had died and losses continued until the 20th. In this interval about half of the flock died. No record of the daily mortality was kept, except that for the 24-hour period ending November 15, 29 died. On the morning of the 16th there were ten dead. The following morning, there were eight dead, and up to the time of our visit that afternoon, five more died and one died during our stay. Another call was made on the 20th and it was learned that three more died on the afternoon of the 17th, seven were dead on the 18th, four on the 19th and only three on the 20th.

When the flock was examined carefully on November 17, every bird appeared sick. The birds were listless and in various stages of weakness. The tail and wings dropped and in some there was diarrhea but practically no soiling of the feathers. According to the owner, the appetite was not so poor as one might expect. Several birds remained on perches and were not frightened by advances. At least one bird showed a swollen tibiotarso-metatarsal joint. In the beginning, the course of the disease was very acute and somewhat more protracted towards the end of the outbreak. The flock appeared much improved on the 20th and thereafter recovered rapidly. When seen on December 17, there was no evidence of disease and all the birds seemed in good flesh. There had been no losses since November 20.

It should be mentioned that seven sheep had been on the farm for three years. There were 17 adult breeding turkeys in a nearby

lot, four guineas and 30 ducks at large, and about 800 chickens but none of these had been affected. The owner also had five pigs far removed from the turkeys and which were cared for by another person. These had shown no disease. The numerous cats and dogs on the farm ate some of the turkey carcasses but without acquiring the disease.

Twenty carcasses were brought back to the laboratory on November 17. All had died within 24 hours, so that they were in an excellent state of preservation. These birds were autopsied immediately and material was taken from the spleen or liver and streaked on agar. In two cases cultures were made from the nasal mucus. The autopsy findings were very consistent and varied only in degree. The findings in the 24 birds examined may be described as follows:

Every carcass was in good flesh. Except in one case, there was no soiling of the feathers around the vent to indicate diarrhea. After removal of the skin from the ventral surface and sides of the body, large or small blotch hemorrhages in the muscles could be seen. These were scattered over the posterior ribs, in the pectoral or abdominal muscles and occasionally in the thigh region. These were found in all but four cases. In no instance did they involve the adjacent skin. The nasal cavity always showed some thick mucus and usually enough to protrude into the mouth.

Changes in the liver were quite constant. In 20 cases the organ was enlarged, congested and friable, and in four of these the surface was mottled. In one case there was congestion but no friability, in another, friability without congestion, and in a third, friability with mottling and areas of necrosis. In one case no changes were recorded.

Catarrhal enteritis with reddening and swelling of the mucosa was observed in all but two cases. In two birds the process extended throughout the length of the small intestine, but was usually confined to the first two-thirds. Occasionally there was a brownish tinge to the mucosa. Swelling of the mucosa was marked in three cases.

The mucosa of the large intestine showed reddening in six cases, and in one the membrane took on a purplish tinge. In one case the gut was catarrhal without other signs of inflammation. Even the mucosa of the ceca was reddened in six cases and the glandular tissue at the iliocecal valve was usually highly inflamed.

Generally, there was engorgement of the mesenteric vessels corresponding in degree to the inflammation of the part supplied. The mucosa of the proventriculus was reddened in two cases and in one of these catarrhal. In another case there was only catarrh.

The spleen showed changes in all but two cases. In nine instances the organ was congested and friable, in three only friable, and in one of these so firm that it crumbled under digital pressure. The capsule was mottled in six cases and in one of these there was also congestion and in two others friability. Hemorrhages up to the size of a pea were seen in four cases. In two of these there was also congestion and friability, in one only congestion and in another only friability.

In nine cases there were hemorrhages on the pericardium. Generally these were small and few in number, but in two cases they were extensive. Endocardial hemorrhages were searched for in only a few birds and found only once. One bird showed myocarditis.

Subpleural hemorrhages occurred on the breast bone in six birds. In only two cases were hemorrhages seen on the fat covering the gizzard and proventriculus. In one case the fat had a reddish tinge. The kidneys showed pronounced congestion in four cases. The lungs showed pronounced congestion in five cases, and in seven additional instances these organs took on a brownish or dusky color.

CULTURES

A pure culture was isolated from each of the 20 turkeys autopsied on November 20, so that with the three isolated on the 17th, 23 strains were available. From mucus of the nasal cavity of two birds examined on the 20th, cultures were also obtained and later a genuine rotlauf strain that Ten Broeck isolated in Germany was added.

After incubation for 24 hours, an almost invisible growth appeared on agar. The colonies were colorless at first but on further incubation became slightly opaque without much increase in size. On drying, the colonies adhered to the agar to such an extent as to render the making of a suspension very difficult. The addition of hemolyzed blood materially enhanced growth.

Every strain produced the characteristic "test-tube brush" growth in gelatin. Growth was very slight in peptone broth; more abundant when enriched with hemolyzed blood. The characteristic cloud effect was produced on shaking.

Every strain produced some blackening along the needle track in lead acetate agar, but this was not very pronounced in a few cases. No indole could be detected with Ehrlich's aldehyde test and nitrates were not reduced.

The fermentation reactions were studied in two series, the first included twelve strains isolated November 20 and the second included eight strains isolated from organs and two from nasal

mucus November 20, together with the three isolated November 17, and the rotlauf strain from Ten Broeck. Peptone water was used as a medium with brom thymol blue. The tubes were inoculated with blood-broth cultures.

In the first series acid was produced in arabinose, dextrose, galactose, lactose and levulose, with the exception of one strain that failed to attack arabinose. In all cases only slight acid was formed in arabinose. There was also some suggestion of acid formation in xylose. A discoloration of this substance was noted, however, when the solution was made. No gas was produced in any case. Adonitol, amygdalin, dextrin, dulcitol, erythritol, inositol, inulin, maltose, mannitol, melezitose, raffinose, rhamnose, salicin, sorbitol, soluble starch, saccharose and trehalose were not attacked.

In the second series, galactose and levulose were not included and our supply of inositol was exhausted. Dextrose and lactose were regularly fermented as in the first series but in no case was arabinose attacked. A single strain produced very slight acid in xylose. The substrata not attacked in the first series were likewise negative in the second.

Our results on the fermentation of arabinose in the first series agree with the findings of Ten Broeck,¹² who, however, reported no fermentation of xylose.

ANIMAL INOCULATIONS

Each of six mice was inoculated subcutaneously with 0.2 cc of a blood-broth culture of turkey strain 13 at noon on December 7. All were dead on the morning of the 9th. On autopsy there was enlargement of the spleen. Cultures were taken from various organs such as the heart, bladder, liver, spleen and lung and a pure growth obtained in each case.

Each of two wild rats received 1.0 cc of the same culture subcutaneously at the same time and although they died on December 10 and 15, respectively, cultures from the liver, heart and spleen were negative. Death was attributed to injuries sustained in trapping.

On January 17, each of two chickens (about half grown) received 0.2 cc of a blood-broth culture intranasally of the strain used above after mouse passage, and each of two chickens was given the same dose in a capsule per os. The only effect noticed was that the birds inoculated *per os* emaciated to some extent. On the 28th, each bird was reinoculated with 1.0 cc of a 12-hour blood-broth culture subcutaneously. This caused the death, on February 4, of one of the birds that had resisted intranasal in-

oculation, and the organism was recovered from the liver, heart, spleen and lungs. One of the chickens that survived inoculation *per os* died on February 6 but from an intercurrent disease (bronchitis), contracted in the animal room.

On January 29, an adult pigeon received 0.2 cc intranasally of a blood-broth culture recovered from a chicken to be described below, and another pigeon was given the same dose in a capsule *per os*. Neither pigeon was affected so that on February 26, the inoculations were repeated with 0.5 cc intranasally and 1.0 cc *per os*. The intranasally inoculated pigeon died March 2, and the organism was recovered from the heart, liver, lungs and spleen. Then the pigeon that had resisted two inoculations *per os* was reinoculated on March 7, with 0.5 cc intranasally, which caused its death on March 11. The organism was recovered from the heart, liver and lungs. Autopsy of the pigeons showed enlarged spleen and liver and intestinal inflammation. In both cases there was severe reddening of the inner surface of the skin in the neck region.

A full-grown turkey received 3.0 cc of a blood-broth culture *per os* in capsules on February 26 without producing any effect. Likewise, 1.0 cc intranasally on March 5, and 1.5 cc intranasally and intratracheally on March 12 were without effect.

PROTECTION TESTS

On January 17, each of six chickens was given 0.5 cc subcutaneously of the culture used in inoculating chickens described above. At the same time two of these each received 1.0 cc of serum collected from recovered turkeys a month previously, and 2 received 2.0 cc each of the same serum. One of the chickens that received only the organism died on the 21st, and a pure culture was recovered on autopsy. The five survivors were reinoculated on January 28 with 1.0 cc subcutaneously of a 12-hour blood-broth culture and all survived.

The lesions in the chicken were similar to those seen in turkeys. The chicken described above showed no reaction at the site of inoculation. There was a small hemorrhage in a thigh muscle. The nasal cavity contained mucus. The liver was enlarged and firm, and the spleen was slightly enlarged. There was catarrhal enteritis with reddening of the mucosa and injection of the vessels. The kidneys were more congested than was usually the case in turkeys. The lungs were quite dusky.

The serum from surviving turkeys was used in protection tests in mice. Serum was also collected from each of the seven chickens

described above that had survived various inoculations. As a control, serum was collected from a normal chicken. One of the test organisms was turkey strain 13 that had not undergone animal passage, and the other was Ten Broeck's rotlauf strain from a hog. The blood-broth cultures were diluted with broth so that 0.1 cc represented 0.01 cc of the original culture. Inoculations were made subcutaneously. The mice were identified by dyes and placed in three cages, mice 1 to 8 in one cage; 9 to 16 in a second, and 17 to 20 in a third cage. Table I gives the results.

The organism was recovered from every dead mouse.

It would be hazardous to draw conclusions from the results of the protection tests, but there is the suggestion that the organism from turkeys is more virulent for mice than the porcine strain. The serum of turkeys recovered from the spontaneous disease seems to have given greater protection against the turkey strain than serum from chickens that resisted artificial infection.

TABLE I—*Showing results of protection tests in mice, March 14, 1935.*

MOUSE	SERUM FROM SURVIVING		NORMAL CHICKEN SERUM	TEST STRAIN		DEATH IN HOURS AFTER INOCULATION
	TURKEYS	CHICKENS		ROTLAUF	NO. 13	
1	0.2 cc			0.1 cc		78
2	0.2 cc			0.1 cc		78
3	0.2 cc			0.1 cc		100
4	0.2 cc			0.1 cc		126
5	0.2 cc				0.1 cc	70
6	0.2 cc				0.1 cc	78
7	0.2 cc				0.1 cc	70
8	0.2 cc				0.1 cc	70
9		0.2 cc		0.1 cc		78
10		0.2 cc		0.1 cc		Survived
11		0.2 cc		0.1 cc		Survived
12		0.2 cc		0.1 cc		*
13		0.2 cc			0.1 cc	44
14		0.2 cc			0.1 cc	44
15		0.2 cc			0.1 cc	44
16		0.2 cc			0.1 cc	45
17			0.2 cc	0.1 cc		*
18			0.2 cc		0.1 cc	78
19				0.1 cc		70
20					0.1 cc	51

*Mice 12 and 17 were either eaten by cage mates or escaped. They could not be found in the animal room.

Mice 10 and 11 were reinoculated March 21 with 0.2 cc of a 1:10 dilution of strain 13 and survived.

AGGLUTINATION TESTS

About 5 cc of blood was collected on December 17 from each of 20 turkeys that recovered from the natural disease and agglutination tests set up in dilutions of from 1:10 to 1:640. No visible agglutination took place in the lowest dilution, even after prolonged incubation.

NASAL CULTURES

At the time the above blood samples were collected, a sterile swab was introduced into the nasal cavity of each turkey and streaked on a hemolyzed blood-agar plate. After incubation, several suspicious colonies were picked but none proved to be the swine erysipelas organism.

DISCUSSION

Our investigations did not reveal the original source of infection. The very rapid spread of the disease, however, can be accounted for by assuming that the few supposed cases of black-head were in reality rotlauf infection and that these infected the catheter that was used to administer the iodine preparation to the whole flock. Very likely predisposing factors play an important rôle and it cannot be denied that close confinement and crowding might not have satisfied this requirement.

The occurrence of the outbreak in November agrees with the observation made by Eber⁸ that the disease in birds is one of fall and spring. This outbreak appears to be the most extensive yet observed in any species of bird. Jarosch's¹ case involved a single turkey and Eber's turkey case seems to have been a sporadic one.

Most investigators mention enteritis and enlargement of the spleen. Our observations show that the liver is likewise enlarged in acute cases. Eber⁸ is the only one to call attention to hemorrhages in the body muscles which he observed in a duck and turkey. This change was an almost constant finding in our autopsies and we consider it of great diagnostic importance in connection with the changes already noted.

The organism involved in this outbreak appears to be a typical rotlauf as far as morphological, cultural and biochemical features are concerned. The mice inoculation experiments show it to be more pathogenic than the swine strain used which is in agreement with the observation of European investigators.

The limited experiments on pigeons suggest that the respiratory tract is a more likely portal of entry than the digestive tract.

Failure to reproduce the disease in a turkey is not surprising, for this species probably has a high degree of resistance in the absence of predisposing factors. Chickens probably also enjoy a similar immunity but can be infected by such unnatural means as subcutaneous injection.

SUMMARY

A disease appeared in a flock of about 500 turkeys that killed over 200 in a period of nine days. Twenty-four birds were autopsied and cultures taken from 23 yielded the same organism in each case. This organism satisfied the morphological, cultural and biochemical requirements of the true swine erysipelas organism. It was pathogenic for mice and chickens by subcutaneous inoculation and pigeons were infected by intranasal inoculation but not *per os*. There were no agglutinins in the blood serum of 20 recovered turkeys tested and the organism could not be recovered from the nasal cavity of the same birds.

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DISCUSSION

DR. L. ENOS DAY: I think this is a very interesting case and is of great economic importance with reference to erysipelas in swine. This disease in swine has spread over the United States to quite an extent; at least it has been reported from a great number of places. Some two years ago, the kidney of a hog was sent to me from Birmingham, Alabama. There were a number of small petechia scattered throughout the organ. We rather suspected swine erysipelas, and later we found it to be that disease.

With swine erysipelas scattered here and there over the United States, and from the fact that poultry infected with swine erysipelas are usually infected in the winter, when they are more or less con-

fined, I am wondering now if meat scrap is not fed to poultry more often in the winter than in the summer. Being scavengers, more or less, I wonder if that would not explain, or help to explain, why erysipelas in swine may be more often introduced in the summer, and in fowls more often in the winter. I wonder if there couldn't be some connection in just that way. In this case, apparently no table scrap was fed, as I understand it.

DR. T. W. MUNCE: Dr. Beaudette is to be highly complimented upon his thorough investigation of this condition. We should also give serious thought to Dr. Day's statements regarding the economic importance of finding swine erysipelas infection in poultry. Possibly as time goes on, more cases may be recognized.

We find swine erysipelas affecting hogs more frequently in summer than in winter. There is no one season in which it is entirely nonexistent. The period of its greatest prevalence begins in the spring months; during the extremely hot weather of July and August, there is some decline, after which it increases, to continue through the fall months until cold weather. In Nebraska, Iowa and South Dakota, we have a few cases of swine erysipelas in the dead of winter.

There is one other thought in connection with the source of infection—perhaps Dr. Beaudette discussed it in his paper: These turkeys were turned out on ground which had previously been used for sheep, and they developed the infection in two or three days. That approximates the incubation period for swine erysipelas. Since sheep may harbor the swine erysipelas organism, we are wondering if there might have been any connection between the infection of the turkeys, and the fact that they had been placed on ground previously used for sheep.

In Dr. Beaudette's review of European literature pertaining to swine erysipelas in poultry, I was impressed by the inconsistent manner in which it spreads through flocks. In one flock of 300 birds, there were 16 deaths; in several flocks, there was one. That irregular manner of attack corresponds to some extent with that observed in the disease among swine.

Dr. Beaudette reports that he was unable, in his agglutination tests, conducted some time later, to demonstrate an appreciable concentration of agglutinins in the blood of the New Jersey turkeys. That experience is not unusual in the case of swine which have made a prompt and complete recovery without the existence of chronic lesions, such as arthritis, and so forth.

This report indicates the possibility that swine erysipelas infections in poultry may, in some respects, resemble those observed in swine.

American Animal Hospital Association

The third annual meeting of the American Animal Hospital Association will be held in Saint Louis, Mo., April 14-15, 1936, at the Hotel Jefferson. A well-balanced program has been arranged and all veterinarians who are interested in the care and hospitalization of small animals are invited to attend the meeting. The program includes a visit to the famous Zoölogical Gardens of Saint Louis. A copy of the program may be obtained by writing the secretary, Dr. D. A. Eastman, 901 Nineteenth St., Moline, Ill.

Custom reconciles us to everything.—EDMUND BURKE.

SUDAN GRASS AND OTHER CYANOPHORIC PLANTS AS ANIMAL INTOXICANTS

A Preliminary Report*

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Death from cyanide poisoning is almost always sudden; frequently it is accompanied with violent convulsions. Once an animal reaches a state of unconsciousness, unaided natural recovery is unlikely. Many times cyanophoric plants cause death so quickly after they are eaten that hydrocyanic (prussic) acid is commonly assumed to be the only active poison. In some parts of the world, when powerfully cyanogenetic plants are eaten, especially by a group of ruminants, it is almost certain that some of the animals will succumb to cyanide. Rarely indeed do all of the animals that eat of potentially cyanogenic feeds die from a single simultaneous feeding on apparently identical material.

On the other hand, in some regions the use of cyanophoric feeds is common and constitutes the basis of a highly profitable industry; for example, flax screenings and chaff in winter feeding of sheep.§

Any plant that contains much combined cyanide may be considered to be potentially poisonous if eaten by animals whose stomachs maintain conditions favorable for cyanogenesis. It is believed that hydrogen cyanide in intact plants is always in a combined form from which hydrocyanic acid must be liberated by enzyme action before toxic symptoms can appear.

There are many cyanophoric Minnesota plants, either native or which have escaped into pastures. Some of the white clovers and vetches, all members of genera to which peaches and apples belong (*Prunus* and *Pyrus*), common flax and the sorghums are examples. On the basis of deaths reported, compared to cyanide found in these studies, the one most likely to kill by cyanide is flax. (table II):

All the species of the genus *Sorghum* are known to contain combined hydrocyanic acid. They are almost universally good feeds in all stages of their development. Many members of the

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§Dried mature flax stems are not appreciably cyanophoric, but the immature plant, either fresh or dried, is highly dangerous.

genus *Sorghum* are valuable for grain and forage for live stock. Most of them are native to tropical latitudes where they are definitely perennial, or long-lived "annuals." In the Temperate Zones most of the sorghums are annuals, as they are usually killed by one heavy frost. Johnson grass (*Sorghum halepense*) is the only *Sorghum* ever to have survived the winter at University Farm.

Such plants as Johnson grass, Sudan grass and the grain and sweet sorghums have been fed extensively without serious loss or consideration of the potential poisons they may contain. Most of the good feeds that are cyanophoric cause death so infrequently that their poisonous properties are seldom taken into account in planning forage crops. The feeding and curing management of these cyanophoric plants, of the grasses particularly, is depended upon to eliminate much of the supposed and real danger from cyanogenesis.

The assumption is rarely made that all cyanophoric plants will act fatally every time they are fed, but in the past, when losses properly associated with cyanophoric plants did occur, it was generally assumed that these deaths were due to the hydrocyanic acid liberated from the plants accused. When our experimental study of Sudan grass poisoning was undertaken in September, 1932, it was assumed that animals that died, after eating Sudan grass in any condition, had been poisoned by the hydrocyanic acid Sudan grass was known to produce during at least part of its seasonal development. Samples of young re-growth Sudan grass taken and tested in the fall of 1932 showed detectable quantities of hydrocyanic acid by the picrate tube test.

In the feeding experiments of the Sudan grass available after the middle of September, 1932, rabbits and sheep were used, but no symptoms of illness developed. Greenhouse-grown Sudan grass was fed to rabbits. Tests with small quantities of grass were thus made. The feedings failed to cause any symptoms of cyanide poisoning. Rabbits are unsuited for the study of toxicity of cyanophoric plants, as the acidity of their stomachs stops cyanogenesis. It was decided, therefore, to plant Sudan grass in the field at intervals during the summer of 1933 and to feed the fresh grass, at various stages of development, to cattle and sheep in an effort to produce observed cases of poisoning.

Accordingly, a series of tenth-acre plots on University Farm field "C" were seeded to Sudan grass at 10-day intervals from May 25 to August 19, 1933. Growth from the earlier plantings was fairly mature (in flower) when taken for feeding. The growing season of 1933 was considered unusually dry. The grass

was cut by hand and taken to the animals in the barn. The cuttings were fed to sheep and cattle with the expectation that at some time during the summer one or more of these animals would show the signs of Sudan grass poisoning that have often been reported to be characteristic. Some of the grass was cured for hay, and fed to sheep in the barns during the fall, after all green and dried frozen Sudan grass was gone. Much of the second growth was pastured before frost. When the frost killed the first growth remaining on the younger plots and the second or third growth on the first plantings, both sheep and cattle were grazed upon the grass *while it was frozen*; also after it was dried in place. Tube tests of these materials showed that some of the frozen grass contained relatively large amounts of hydrocyanic acid, whereas the dried frosted grass had none. The fairly extensive feeding of Sudan grass in 1933 at University Farm (see table I) failed to produce symptoms of poisoning of any kind.

The spring and summer of 1934 were the driest of recent record, consequently ideal conditions existed for testing a prevalent idea regarding Sudan grass. This idea is that drouth causes the appearance in Sudan grass of excessive amounts of cyanogenetic glucosides; an idea which is contradicted by observations on cyanogenesis on all other kinds of cyanophoric plants. If this idea is true, the supposed greater cyanide content of the stunted grass should in all probability have been indicated in Minnesota by greater losses of live stock that ate Sudan grass either growing or cured, *and hydrocyanic acid should have been abundant in the plants eaten and in animals that succumbed.*

On the whole the Sudan grass and sorghum fed cattle and sheep in 1933 was generally more cyanophoric than the Sudan grass of the 1934 season, a condition which conforms to the general observation that hydrocyanic acid is most abundant in rapidly growing plant tissues. The samples of Sudan grass and hay submitted from various sources for tests during the 1934-1935 feeding season were notably free of cyanide. The early and extended heat and drouth of 1934 so badly stunted the growth of cyanophoric plants that tests showed most of them to contain even less cyanide than was found in those examined in 1933.

The 1935 season was different from the three previous years in that it was ideal for testing the action of reversed weather conditions on growth of Sudan grass. The rainfall in spring and early summer was a little above normal. Cool, damp planting time followed by hot, humid midsummer growing season was the reverse of 1934. The Sudan grass seemed to stand still for several weeks, then to grow amazingly fast when hot weather came on. Sudan

TABLE I—*Experimental feeding of cyanophoric and suspected "poisonous" feeds at University Farm.*

DESCRIPTION OF FEED		FEEDING DAYS			
		1933		1934 TO MAY 10, 1935	TOTALS
Pen fed	COW	SHEEP	COW	SHEEP	
	Fresh-cut:				
	Sudan grass	184	1130	86	114
	Sorghum	69	320	10	
	Frozen Sudan			3	
Pastured grasses	Frozen sorghum				
	Totals	253	1450	99	114
	Before frost:				
	Sudan grass		240	28	448
	Sudan grass and sorghum		240		1294
Pastured grasses	"Animal Husbandry's" Sudan grass				
	During and after frost:				
	Sudan grass			10	168
Pastured grasses	Sorghum				
	Sorghum and Sudan grass	2	400		
Totals		2	880	38	1910
					2830

TABLE I—*Experimental feeding of cyanophoric and suspected "poisonous" feeds at University Farm—(Continued).*

DESCRIPTION OF FEED	FEEDING DAYS			TOTALS	
	1933	1934 TO MAY 10, 1935	COW	SHEEP	
Dry cured: Sudan grass				602	Manger-fed as forage (493)
Sorghum	450	530			
Sudan grass and sorghum		400			
Silage					
Phosphoric-acid preserved: Sudan grass					
Sorghum					
Totals	450	930	228	802	
Frozen sorghum through fistula	10	80			
Flax screenings and straw				30	
Samples of suspected feeds from farmers				162	
Totals	10	80		192	282
Column totals	715	3340	365	3018	7438
Yearly totals	4055	3383			

grass usually does best when planted in warm soil with hot weather to start. Rainfall for the summer was normal as to amount and distribution.

Throughout the season of 1935, the cyanide content of most of the samples of Sudan grass examined was higher than all but the exceptionally high-cyanide samples of 1934, and so continued until the cyanide content decreased with the normal maturation of the Sudan grass. As will be noted again later, this higher cyanide content did not accompany any deaths or illnesses reported to the University Farm.

From the 7,438 feeding days accounted for in table I, there may be deducted 407 days on sorghum alone, together with 1,620 days on mixed sorghums and Sudan grass, and 110 days on flax and flax products. There should also be deducted 700 days for "poor pasture conditions," making a total of 2,387 feeding days not altogether pertinent to the study, and leaving 4,601 feeding days on Sudan grass, or more than eleven times as many feeding days on Sudan grass as on sorghum. Sorghum ordinarily has about ten times as much cyanide as Sudan grass, so that the amounts of toxic materials offered may be considered to have been comparable.

None of the feedings of either sorghum or Sudan grass produced symptoms of intoxication during these two seasons. Laboratory tests of the materials fed showed that the plants of 1934 were not more cyanophoric than those of the 1933 season.

As the feeding season for 1935 is not complete, none of the data for it are included, but it will suffice to report that early in May, when fresh, green forage of normal kinds became available in amounts large enough to substitute or supplement the poor imported or native dried fodders, startling morbidity and mortality among stock suddenly ceased. Not since May 10, 1935, has a request for examination of a feed for suspected poisoning of stock been received at University Farm; and this in the face of observed higher cyanide content of samples of Sudan grass, and the planting of approximately 3,500,000 pounds of Sudan grass seed in Minnesota in 1935.

Of cases reported by farmers or veterinarians during the 1934 growing season, three cases were encountered in which cyanide in Sudan grass could reasonably have been a contributing or *only* cause of death. Although there were many requests to test samples of forage and animal tissues, only one of these was investigated sufficiently to leave little doubt that hydrocyanic acid was the lethal agent, and this one was complicated by the presence of sorghum adjoining the Sudan-grass field.

TABLE II—Summarizing cases of "poisoning," tests of materials sent to Veterinary Division for test.

PLANT	YEARS	SAMPLES SENT FOR TEST FROM		RESULTS OF TESTS FOR HCN				TESTS PER YEAR	PROBABLY JUSTIFIABLE DIAGNOSIS ON BASIS OF HCN TESTS
		SUSPICIOUS PLANTS NOT CONNECTED WITH LOSS	CASES OF ILLNESS OR DEATH	NEGATIVE	TRACE	POSITIVE	STRONG		
Sudan grass	1932	2		1				1	
	1933								
	1934	39	6	18	18	4	4	44	1*
	1935†	11	11	15	4	3		22	
	Totals	52	17	34	22	7	4	67	1
Flax	1932		2						
	1933		3						
	1934	2	7	1	1	1	5	1	4
	1935†	3	3			4	2	6	3
	Totals	5	15	1	1	6	7	15	7
Sorghum	1933		1		1				
	1934	2	1	1		2	1	4	1*
	1935†	1		1				1	
	Totals	3	2	2	1	2	1	6	1
	1934	*	3			2	1	3	3
Millet	Totals		3			2	1	3	3
	1934		1	1					
	1935†		4	4					
	Totals		5	5				5	
	1929	1		+					
Sweet clover	1933		1	1					
	1934		1	1					
	1935†	2		3					
	Totals	3	1	5				5	
	1932	2							
Miscellaneous	1933		4	2				2	
	1934		19	15				15	
	1935†	2	7	9				9	
	Totals	4	30	26				26	
	Grand Totals	67	73	73	24	17	13	127	11

*Sorghum was associated with Sudan grass in case diagnosed as "an HCN death" from Sudan 1934.

†To May 1.

‡Not tested.

Diseases of animals resulting in sudden death, particularly of cattle and sheep during the 1934-1935 feeding year, in most instances have been attributed to unusual and unsuitable feeds. Much of the accused feed was shipped into areas where there was little or no growth of forage in 1934. The forages that were shipped in came from both north and south of the affected feeding zone, hence the imported feeds might reasonably be expected to have some properties to which the local animals were unaccustomed.

From table II it may be seen that 69 of the 140 requests for examination of feed were Sudan grass. Of the 127 sets of laboratory tests, 67 were on Sudan grass, 34 of which were negative for hydrocyanic acid and 22 showed only a trace. Therefore 56 of the 67 samples tested were certainly innocent of causing deaths from cyanide poisoning by Sudan grass.

From table III it may be concluded that Sudan grass is relatively less dangerous than is commonly assumed and that other cyanophoric plants are much more commonly associated with death.

Cases of death where "millet" was fed were analyzed with negative results for cyanide. The "millet" items in table III were always associated with the death of animals. A few of the "millets" can be demonstrably cyanophoric only when very young. The others are not cyanophoric at all. The bulk of this evidence, together with much experience of farmers, indicates that although cyanide sometimes may be a factor in the loss of animals, it is the uncommon cause even when cyanophoric plants have been fed prior to the death of the animals.

The verity of this idea is supported by the results of the experimental introduction of mineral cyanides (HCN, KCN, NaCN), orally by stomach-tube, and by direct introduction into the rumen through a permanent fistula or through a cannula. When the cyanides were mixed with the rumen contents, as is possible with the cannula and through the fistula, immense doses of hydrocyanic acid could be administered without the production of detectable symptoms. If much smaller doses were allowed to contact the mucosa of any portion of the rumen, poisoning quickly developed. When given orally by capsule, doses considered to be even three to four times lethal would produce symptoms in only about half of the individual experiments. Those animals affected suffered varying degrees of intoxication. One way to account for the variable results of administration by capsule is to suppose that sometimes the capsule disintegrates near the rumen wall and sometimes it is dissolved after having been moved far into the

rumen contents. The above given facts, together with the negative results of feeding trials of potentially powerfully cyanogenic plants, seem still further to reduce the probabilities of Sudan grass being a likely cause of appreciable losses among farm animals from cyanogenesis.

The superficially observed symptoms in many of the cases where cyanide proved to be absent from submitted samples of feed and animal tissues resembled the symptoms of cyanide poisoning. During the winter months of 1934-1935, sudden losses continued in animals both native to and imported into Minnesota. These losses ceased soon after the first of May, 1935, when fresh forage became abundant.

In the extreme southwestern part of the state, a farmer imported sheep from the eastern slope of the Rocky Mountains and fed them with his native sheep on ground feeds and hay of the

TABLE III—*Samples submitted and tests made, by years, 1932 to 1935.*

YEAR	PLANT	FOR TEST ONLY	CASES OF ILLNESS OR DEATH	TEST MADE
1932	Sudan	2	2	1
	Flax			
	Miscellaneous	2		
1933	Totals		4	2
	Sudan			
	Flax		3	1
	Sorghum		1	1
	Sweet clover		1	1
	Miscellaneous		4	2
1934	Totals			9
				5
1935	Sudan	39	6	44
	Flax	2	7	8
	Sorghum	2	1	4
	Cherry		3	3
	Millet		1	1
	Sweet clover		1	1
	Miscellaneous		19	15
	Totals		43	38
				76
	Sudan	11	11	22
	Flax	3	3	6
	Sorghum	1		1
	Millet		4	4
	Sweet clover	2		3
	Miscellaneous	2	7	9
	Totals to May 1		19	25
				45

1934 crop. At first all the sheep were on green pastures. With the advent of cold weather the animals were transferred to feed-lots where they were given concentrated rations and Sudan grass hay for a time. With congestion of the animals into limited space and with little chance for exercise on heavy feeding, sudden deaths immediately began to occur and continued at an increasing rate. Tests of all feeds and the tissues of some animals that died in our presence were consistently negative for hydrocyanic acid. The symptoms in many of the animals observed suggested a nervous disorder, and death resulted from respiratory failure, as in cyanide poisoning. Without concomitant chemical tests for cyanide in feed and animal tissues, these symptoms would have been easily mistaken for cyanide intoxication, due partly to the presence in the feed of Sudan grass and partly to the widespread notions of the poisonous nature of Sudan grass, because of its alleged cyanide content. As in this case the sequence of gross symptoms of cyanide poisoning is spectacular, violent and rapid.

In the west central section of Minnesota, a farmer obtained feed from the Service Stores managed by drouth relief officials. The forage portion of the feed was called "Sudan grass." Our examination of a sample revealed that the forage was not all Sudan grass. Shortly after it was eaten by the cows, the farmer wrote:

. . . eleven cows quickly succumbed. When they were seen an hour after feeding four deaths had occurred. Seven others were gasping for breath. The barn doors were opened and the animals were released from the stanchions in an attempt to get them outside. Five died on the way out, and two more died as they got out the door. The eleven cows died in about an hour. They bellowed, gasped for breath, and dropped down dead. These cattle were not bloated and did not bloat for a while after they died.

The history and symptoms given by the owner strongly suggest that the animals died from a poison in their feed.

None of the animal tissues of the above case was examined by us for cyanide. Its absence from the forage sample submitted eliminates almost every chance that cyanide from that forage caused the losses. It is our opinion that the eleven cows died of some kind of food poisoning, *not cyanide*.

A third instance (this from north central Minnesota) involved hay thought to be responsible for sudden alarming illness in cattle, but in this case no deaths. The owner wrote the following:

. . . Recently I began feeding hay composed of Canada thistle and oats and since that time I have had two sick cattle. Although I am not certain, I believe the hay was responsible for the trouble. I am wondering if some of your staff could advise me how (if possible) I can utilize the rest of this hay, for I need it for feed and I have three or four tons of it.

This hay does not seem to be spoiled although it does have a sort of "musty" smell. It was impossible to cure this hay properly last summer, because of the large proportion of thistles (about 50%) and because the oats were not yet headed out. It is slightly damp, though not wet, and I find traces of mold on some of the thistle stems and on some of the joints of the oat stems.

Regarding the animals, I would say that they became sick quite suddenly a few hours after eating the hay and that they recovered rapidly. While in their worst stages the animals were prostrate on the floor and their breathing sounded like hiccoughs or grunts.

This case illustrates the evidence in tables II and III that plant poisonings may develop symptoms similar to those of cyanide, but in which plants found to be non-cyanophoric are involved. Other cases of deaths from eating Canada thistles and oats, each alone, are included in tables II and III, most of them having been sent in during 1934 and early 1935. In all of this type of intoxication, cyanide was absent from the samples of feed submitted.

There have been sudden losses of cattle reported in 1935 but in no case have cyanophoric plants been involved. No obscure etiology like those cited above has come to our attention as yet in 1935.

When one considers the negative results of the feeding experiments for nearly three years at University Farm, there appear: (1) the consistent failures of plants and feeds to demonstrate assumed toxic properties when brought to University Farm and fed, even though there is some evidence that these same plants in another location fed to other animals were the toxic agents; (2) even when tests for hydrocyanic acid in the feed were strongly positive, one is led to believe that the presence of hydrocyanic acid in the feed is not alone sufficient to explain some deaths; (3) the absence of hydrocyanic acid from the feed does not establish the innocence of the accused forage. The number of cases in which deaths were associated with cyanide-free samples, and plants known to be cyanophoric only at times, is too great to be ignored, and (4) the deaths reasonably attributable to the eating of plants usually cyanophoric fell off to almost nothing at the same time that cyanide in these same plants increased in 1935, to become another indication that deaths from eating cyanophoric plants may result from other factors than cyanide alone, and that accidents from the feeding of these plants may result from a much more complicated set of conditions than is now generally believed.

In view of these observations it has seemed wise to break down the problem of the feeding of Sudan grass, sorghums and other cyanophoric feeds, into simpler problems in the effort to make some tangible progress in the elucidation and control of these types of plant poisonings.

ANAPLASMOSIS TRANSMISSION BY THREE SPECIES OF TICKS IN CALIFORNIA*

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Transmission of anaplasmosis by the spotted fever tick (*Dermacentor andersoni* Stiles), the Western dog tick (*Dermacentor occidentalis* Neum.), and the winter tick (*Dermacentor albipictus* Packard) is reported, being effected in the case of *Dermacentor occidentalis* through the egg. As reported by Rees¹ and Cowdry and Rees,² *Dermacentor andersoni* has already been incriminated, but transmission by *Dermacentor occidentalis* and *Dermacentor albipictus* is believed to be new, since Rees³ states his attempts with *Dermacentor albipictus* were unsuccessful. Although he records one hereditary transmission by *Boophilus annulatus*, Rees³ apparently does not consider it definitely conclusive; the two cases, involving *Dermacentor occidentalis* to be described in this paper, are, therefore, thought to be the first true biological transmissions of anaplasmosis in the United States.

CASE 1

On April 18, 1935, last nymphal and adult ticks of the species *Dermacentor andersoni* Stiles, which had become engorged on cow 2652, experimentally infected with anaplasmosis, were placed on cow 130 and allowed to remain until April 23.

Twenty-nine days later, numerous Anaplasma were found in the blood smears; anisocytosis was present, but no signs of regeneration. Symptoms of nasal discharge, rapid pulse and respiration, and constipation appeared. The animal became very weak; however, within a few days, the presence of new red corpuscles was noted and the animal began to recover gradually.

CASE 2

An outbreak reported on a ranch near Walnut Creek, California, in January, 1935, had the following history: A number of Hereford cattle had been imported from Nebraska on August 28, 1934. During the latter part of September, they were placed in a pasture with other cattle, some of which had recovered from anaplasmosis. A number of cases of anaplasmosis occurred among the imported cattle and no evidence of mechanical trans-

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mission could be found. On January 5, 1935, several engorged female ticks, *Dermacentor occidentalis* Neum., were removed from one of these cows which was proved, upon blood examination and autopsy later, to be suffering from anaplasmosis.

Larvae hatched from eggs laid by these ticks were placed upon the udder of cow 1242 on March 7, 1935, and allowed to feed until their removal on March 21.

Blood examinations made from time to time failed to indicate the presence of *Anaplasma marginale* definitely until four months had elapsed. On July 8, 1935, the marginal bodies were found to be fairly plentiful. Further examinations showed them to be steadily increasing in number; at the same time the number of red corpuscles was decreasing, and no signs of regeneration could be observed. On July 17, the animal appeared very weak and exhibited the typical symptoms of rapid pulse and respiration, drooling of the mouth, and muscular tremors. Its red cell count dropped to 850,000; the iron content fell from 40.8 mgm (on July 8) to 11.1 mgm, and hemoglobin from 12.17 gm to 3.33 gm. The following day it was found dead.

Postmortem examination revealed the usual changes: the spleen was enlarged about two and one-half times and was typically jam-like; the liver was markedly icteric; the gall-bladder was distended with dark, thick bile, and mucus-covered pellets of feces were noted in the large colon.

CASE 3

On August 19, 1935, larvae of *Dermacentor occidentalis* Neum. hatched from ticks, some of which in their last nymphal and some in the adult stage had become engorged on recovered cow 130 previously referred to, were placed on the scrotum of calf 194 and allowed to feed until August 23.

The first blood examination, made on September 24, showed a fairly plentiful number of *Anaplasma*, which increased within a few days. On October 2, the marginal bodies were less abundant, but no signs of regeneration could be detected. The clinical symptoms at this time were slight inappetence and a lessened activity. A few days later, regeneration began to set in and by October 23 the presence of only a few *Anaplasma* and very slight anisocytosis indicated that the blood was approaching normal. The calf, too, appeared to have regained his normal condition.

CASE 4

On October 18, 1935, nymphs of *Dermacentor albipictus* Packard, which had fed upon calf 194 (case 3) were placed on the scrotum of calf 196, where they remained until November 10.

Five days after their removal, the first blood examination was made and the marginal bodies appeared to be rather numerous. On November 18, the number had increased considerably and regenerative changes were observed. The usual activity of the animal was not noticeably impaired, although the iron and hemoglobin fell to approximately one-half the normal content. Three days later, the bodies were growing scarce and the blood showed no changes other than slight anisocytosis, indicating evidence of infection was disappearing from the blood.

SUMMARY

Case 1 substantiates the report of Rees and Cowdry, establishing *Dermacentor andersoni* Stiles as a vector of anaplasmosis.

Cases 2 and 3 incriminate another species of tick, *Dermacentor occidentalis* Neum., and demonstrate for the first time, it is believed, in the United States, a definite biological transmission of the disease.

Case 4 involves another species, *Dermacentor albipictus* Packard, hitherto unproved, as an agent of mechanical transmission of anaplasmosis.

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²Cowdry, E. V., and Rees, C. W.: An attempt to ascertain the behavior of *Anaplasma marginale* in ticks transmitting anaplasmosis. *Amer. Jour. Hyg.*, xxi (1935), pp. 94-100.

³Rees, C. W.: Transmission of anaplasmosis by various species of ticks. U. S. Dept. of Agr. Tech. Bul. 418 (1934), pp. 1-17.

Doctor Williams Celebrates 80th Birthday

Dr. W. L. Williams, Professor Emeritus of Obstetrics and Diseases of Breeding Animals in the New York State Veterinary College at Cornell University, reached the ripe old age of eighty years on February 26, 1936. Members of the faculty, guests of the College, and former assistants of Dr. Williams gathered in Balch Hall on the Ithaca campus to participate in a dinner in his honor on the evening of his birthday. Mrs. Williams received with her husband. Letters and telegrams were received from a large number of friends who could not be present. A musical program was much enjoyed. Dr. Williams demonstrated that he has not lost any of his skill and dexterity with the knife by cutting the birthday cake in the most approved fashion.

Trust that man in nothing who has not a conscience in everything.—STERNE.

PLANNING FOR THE FUTURE IN VETERINARY MEDICINE*

By W. A. HAGAN, Ithaca, N. Y.

New York State Veterinary College at Cornell University

One of the things that has come out of the economic depression is the general belief that in future we need to do more planning so that in the better days that are ahead of us we may do our expanding more wisely than was done when "good times" were with us last. Whether or not we can plan in such a way as to avoid such distressing periods as the last six years have been, is not a topic on which I care to speculate. That there are advantages in planning ahead, however, is something that I shall assume requires no argument. We have awakened to a consciousness that a straight course cannot be steered unless we have a chart to go by, and we should have a pretty definite idea of where we are going even though we may not be entirely sure of the best way to reach that destination.

While other groups are planning for the future, it is advisable for the veterinary profession to be doing likewise. Our profession has about completed a traditional stage and a new stage is before us. What our position in the social scale of the future is to be, is largely a matter for us to decide for ourselves. Certainly there are few outside of our group who will do a great deal of worrying about it.

In speaking on this topic, it may appear that I am rather presumptuous. I have no such intention. Inasmuch as the veterinary colleges must play a major rôle in any such scheme, and because of my responsibilities to one of these schools, I have given the matter considerable thought. It is some of these thoughts that I propose to give you tonight.

In laying out a developmental plan, it is my opinion that we should not pay too much attention, in the beginning, to its immediate feasibility or the means of putting it into operation. Such things will have to be considered eventually, of course, but in setting up a plan we should strive to see our goal first and consider plans for reaching it, or reaching in its direction, secondly.

A story is told of one de Hery, a military surgeon in the army of Francis I of France, who had developed a wide reputation and a lucrative practice in his treatment of that very prevalent dis-

*Presented at the monthly meeting of the Veterinary Medical Association of New York City, March 4, 1936.

ease that we now call syphilis. Entering one of the churches of Paris one day, some of the members of the court found de Hery worshipping at the feet of a statue of Charles VIII. Since this man had been far from saintly, they were astonished that the doctor should show reverence to his memory. But de Hery answered, "I do not care whether he was a holy man or not. I only know that this man has done more for me than all the saints I know of. He has made me what I am today." "But how is that, Monsieur?" asked one of the courtiers. "You have never met him. He died before your time." "Quite true," replied the eminent physician, "but isn't he the great man who brought syphilis into France?"

This story illustrates, in an extreme way, of course, an attitude toward the practice of medicine that all will condemn. Although it may be permissible and desirable for many professions to create work for themselves, it is not permissible for those engaged in the healing arts to do this, except insofar as they can do it by bringing the public to realize the services that they can render in the control and cure of diseases. By the oath of Hippocrates, the physician dedicates his services to the welfare of his fellow men. Service is placed above personal profit. Veterinary medicine, in the same way, should be dedicated to the welfare of our domestic animals and the attainment of this ideal should be placed above personal profit. Only by so doing does veterinary education merit the public support that it is now receiving.

BROADER VIEW MUST BE TAKEN

In planning for the future, I feel strongly that the profession should take a broader view of its work than has been done in the past. Every member should be made to realize that his function is more than doctoring the ills of live stock. He should be an adviser to the public on animal health; he should do all in his power to aid his clients in avoiding animal diseases, and when they are afflicted with these diseases, he should do his utmost to help his clients eradicate them, even though while so doing he may think that he is working himself out of future work. The veterinarian who withholds information from his clients, so that he may at some future time profit from their ignorance, is a parasite on the live stock industry and deserves to be eliminated from the profession. There are not many such men, I am sure, but I have known a few. The veterinarian should regard himself as an educator in animal health. By this I do not mean that he should go out of his way to educate, necessarily, but that he should

always, in the course of his work, try to leave, with the owners of animals that he has treated, information about how the disease was contracted, if that is known, and some information as to how to avoid a similar situation in the future.

Conditions today are very different from those of twenty years ago and earlier, and it behooves all professions to recognize changes as time goes on and make adjustments to fit new conditions. The advent of cheap automobiles and good roads has removed the isolation of the farmer. Farmers and their families now travel about their states freely, and the experience is a great educating influence. The development of the agricultural extension services of the land-grant colleges has brought science to the farmer. The colleges and schools of agriculture are giving college educations to many of the present and future generation of farmers. In other words, the educational level of farmers, as well as city people, is vastly higher today than it was a generation ago, and the veterinary profession will make a sad mistake if this fact is not fully realized.

A CHALLENGE TO THE PROFESSION

The new condition presents a challenge to the profession, a challenge which, if not properly met, will place veterinary medicine in a less enviable position than it now occupies. As the educational standards of farmers and other live stock owners rise, we cannot expect them to accept the principle that all knowledge of animal diseases should remain with veterinarians. We cannot expect them to continue to accept the thesis that all diseases are too complex for them to understand and to treat successfully. With an improving educational level, the halo of mysticism that formerly surrounded diseases is passing away, and in its place a truer, more rational conception is reaching the man in the street.

During the last twenty years, various agencies have been busy in popularizing disease information, with the result that medical practice has not suffered and health conditions in the meantime have greatly improved. The National Institute of Health, state and city health departments, the American Red Cross Society, the American Tuberculosis Association, the American Medical Association, many life insurance companies, and a number of other privately endowed foundations have been taking part in the campaign for better health by disease prevention. All of these agencies issue bulletins and press releases on health problems and several publish periodicals for lay consumption. The monthly magazine, *Hygeia*, published by the American Medical

Association, is an example of what I mean. All of these publications issue reliable medical information in simple language.

The public grasp of medical matters makes them all the more keen to understand the ailments of their animals, and explains, I think, why publicly supported veterinary organizations of all sorts are facing an insistent demand for bulletins on animal diseases. This demand must be met by somebody, and it seems to me clear that the interests of both our profession and the public will be best served by having it met by veterinary institutions. If they do not do it, others will. As far as I know, this situation occurs nowhere else in the world than in the United States. Whether we like it or not, it is a tribute to our higher level of general education.

Some of the publications issued by companies that have something to sell to veterinarians make it a practice regularly to condemn those who, in any way, engage in veterinary education of laymen, and do their best to make it appear that the practitioners (who are the principal customers) are being abused and "sold out" by them. Their principal fire is directed at state organizations, the federal government being spared, although in its series of Farmers Bulletins the federal government probably reaches more farmers with veterinary information than any state agency. These publications sometimes go as far as to claim or infer that the progress that veterinary medicine in this country has made, has been made by private practitioners working under a handicap of publicly supported institutions which are doing their best to undermine the position that the practitioner now holds. Since these people blatantly advertise their self-righteousness in selling their products only to veterinarians, one cannot help but question their motives and wish they would not force the issue so strongly.

I believe that the veterinary profession should take a different attitude toward lay education. We can retard it perhaps, but we cannot prevent it, and an antagonistic attitude on our part will ultimately react against us. We should participate in it rather than antagonize it. Such a program should in no way threaten the practices of competent practitioners. That it will threaten the practices of the poorly educated and the incompetent, there can be no doubt, but for those we can hold no brief. Those who cannot, or will not, keep abreast of progress in their profession should not be protected by their colleagues.

THE AGRICULTURAL EXTENSION SERVICE

Judging from what one may read in some of our journals, and in the house organs of some commercial companies, the veterinary

profession has a bitter enemy in the agricultural extension service of many of the states. This is a very unfortunate situation, if conditions are as bad as they are painted. I am glad that strained relations do not exist in New York. The county agricultural agent and the practicing veterinarian should work together. They can be of much assistance to each other if they are on friendly terms, and can damage each other greatly, if they are not. The agricultural extension services of this country have done a great deal of good for agriculture and undoubtedly are here to stay. The extension teaching program has developed very rapidly and, as in everything else that develops rapidly, flaws in the scheme have developed. Although much federal support goes into the state programs, many of the policies are made by the officers who head the programs in the individual states. This accounts for the varying measures of success that the programs have met with.

RELATIONS MAY BE STRAINED

The program is supposed to be entirely educational but this has not always been adhered to, and in some midwestern and southern states, county agents have been guilty of rendering veterinary services, such as the vaccination of hogs, and the peddling of veterinary remedies. In those states where such conditions continue to prevail, the veterinary profession will have to carry on the fight until such abuses are remedied. I am afraid, however, that the bitter attacks on the whole agricultural extension service of the United States by writers in some of the veterinary publications will serve only to create strained relations in states where there is no reason for them. I am in close touch with the men who are at the head of the extension service in New York, and I know that it is their desire to coöperate and work with practicing veterinarians. I know, too, that they appreciate the relations that should exist between their county agents and veterinarians, and are ready always to hear complaints when veterinarians feel that they have not been fairly treated by the extension men.

If there is any single group of people in this country to whom the veterinary profession should look for support, it is the farmers who are our principal live stock owners. If there are any who continue to think that farmers today are not well organized politically, they are at least fifteen years behind the times. The veterinary profession will do well to cultivate the acquaintance and favor of farm leaders, and in saying this I am not giving wholly selfish advice. Organized agriculture is interested in veterinary medicine, but in many instances, I am afraid they are

very much provoked by the attitude that the profession has taken toward them.

Those who argue that veterinary medicine already is too largely dominated by agriculture and that the profession should work toward breaking this hold and seek a closer alliance with medicine, must remember that medicine cannot be expected to have as great an interest in our development as does agriculture. I am for anything that will bring us in closer alliance with medicine, and for anything that will aid in dispelling the notion that veterinary medicine is just a specialized branch of agriculture, but at the same time I am strongly of the opinion that we should not forget practical considerations which tell us that our natural friends are the live stock men and we must not sever our bonds with them. A professional group numbering no more than ten or eleven thousand members cannot hope to get far in a democracy such as ours where it numbers less than 0.01 per cent of the population, unless it has the friendly support of larger, more influential groups.

EDUCATIONAL STANDARDS ADVANCED

As you know, all of the better veterinary colleges in this country have materially advanced their educational standards in recent years. As far as the New York State Veterinary College is concerned, I believe that the practice of limiting the enrollment and admitting students by selection has been of greater importance in improving the quality of our student body than the advancement of our entrance requirements. In 1932, when we first required one year of college work for admission, we contemplated the requirement of an additional year by 1934 or 1935. This idea has been given up, temporarily. As long as we continue to have large numbers of applicants, so that we have considerable choice in our selections, we have the feeling that we had better remain on the present standard. During the last two years, we have had a sufficient number of applicants having two, three, and even four years of college work, so that we might have filled our quota on any of these bases had we desired to do so. In making our selections we naturally favored the applicants who had had more than the minimal preparation and yet when our selections had been completed we found that approximately half of those admitted had had no more than a single year of college preparation. Had we been compelled to take only those with more previous training, I am sure that we would not have admitted as capable a group as we now have. I am not sure, either, that we are always going to have as many applicants to choose from as we now have, and

if the time arrives when candidates again are scarce, the higher requirements may prove embarrassing.

After all, intelligence is a quality that cannot be acquired by education, as our wealth of educated fools attests. No matter how high our educational requirements may be placed, fools can qualify. Many of the applicants for admission to our college who have presented considerably more preliminary education than we require obviously are misfits, or persons who were turning to veterinary medicine when they found that they could not get ahead in whatever field they had previously chosen. Many of them obviously had little idea of what veterinary medicine was like, and had applied because there is no tuition charge to residents of the state and they had been told that the profession was not overcrowded.

NEW STUDENTS CAREFULLY SELECTED

In our system of selective admissions, we are considering qualities other than scholastic ability, although, of course, scholarship is the first requisite. The background of experience with animals is considered, also mental habits and character, as far as they can be determined. All of the candidates that are accepted are interviewed, so that their personalities and personal appearance can be judged. Records of mental ability tests often are available, and all students that come to us through the New York State College of Agriculture bring with them a farm practice rating, which gives us a fair idea of how much experience they have had with farm animals. As an additional means of insuring that our graduates are really intelligent, well-balanced men, we are considering the introduction into our educational program of an innovation known as a comprehensive examination.

In spite of the fact that we have set our entrance hurdle much higher than it has been previously, we expect that we will make some mistakes in our selections. Since scholarship is the quality upon which we are least likely to err, inasmuch as we have rather complete records relating to it at the time we make our selections, it is anticipated that nearly all of those admitted will be able to pass their courses. Of those who have passed everything and come up for graduation each year, we nearly always have one or two men who are misfits and practically every member of our faculty agrees that it would have been better had we not been obliged to graduate them. Since they have fulfilled all of our requirements, we have no choice, as matters now stand.

In the comprehensive examination, if it is instituted, each member of the junior class will be called up before a committee of the

faculty representing all of the principal branches of our course, and this committee shall have the responsibility of determining, in whatever way it chooses, whether the individual shall be permitted to take up the work of the senior year, or be told that his progress in his work has not been satisfactory and that he will not be permitted to go on with the course. This committee would be expected to take a broader view of the student's work than can be taken by any individual professor, and could recommend that a student be dropped even though he had met the requirements of all course work up to the time of the interview.

STATE BOARD EXAMINATIONS

As an additional means of eliminating the unfit from the profession, I think the state board examinations should be stiffened. New York probably has as good an examination as any state, and much better than most. Unless this examination is made considerably harder, however, there is a strong likelihood that any improvement in professional standards that may be accomplished by more rigid requirements of our own college will be largely offset by an influx into the state of graduates of other schools of lower standards. In this connection I may point out that at present, according to information which I have collected from the deans of other schools in this country, there are approximately two-thirds as many New York State residents enrolled in these schools as in our own, and many of these, perhaps a majority, are men whom we have declined to admit. Presumably a large part of these men will wish to return to this state after graduation, and most of them will be eligible to take our licensing examination. We should not set up any barriers to these men, other than the barriers that our own men have to meet. Without a doubt the better men from most of the other schools will be more competent than the poorer from our own school.

The State Board of Veterinary Examiners has the responsibility of seeing to it that those who are permitted to enter practice in New York are competent, and this Board should take steps to have their examination keep pace with advancing educational standards. Incidentally, it is my opinion that the profession should use greater care than has been used in the past in nominating its examiners. In saying this, I am not casting any aspersions upon the present board, or on any past boards, for that matter. I wish simply to emphasize the fact that this board has a very important function to perform, and new members should be selected with great care.

Fear has been expressed that the policy of several of the schools, of limiting their admissions, will react unfavorably on the profession because we are apt to create a dearth of veterinarians. It is pointed out that if a shortage of veterinarians occurs, functions that may properly be exercised by members of the profession will be taken over by other groups. The validity of this argument cannot be denied. But the question arises as to whether or not we are likely to create a shortage by our present policies. In the country as a whole, we learn from census figures that there probably are about two thousand fewer veterinarians now than there were twenty years ago. But, twenty years ago, the automobile was just coming into use, and the fine highways that we now have were mostly dirt roads. The country practitioner of today can cover several times as much territory as could the practitioner of pre-war days. Furthermore, many of the older practitioners were proprietors of livery and sales stables, or were horse-traders, and often depended quite as much on these enterprises as upon their practices for their living. And finally, I submit that the better educated men of today will not and should not be contented with the living standards that satisfied the majority of practitioners of a generation ago.

ARE MORE OR FEWER VETERINARIANS NEEDED?

The general standards of life have risen, considerably in the last quarter of a century and the veterinarian cannot be criticised for insisting on better things for himself. I am not at all sure that the country needs as many practitioners, under present conditions, as we had during the earlier years of the century. Of course, the veterinarian of today is called upon for a far greater variety of services than he exercised earlier, but whether these services more than offset the greater efficiency he has acquired through modern inventions, is a question to which I do not know the answer. Finally, if we restrict our thinking to the northeastern part of the United States, I doubt if we have fewer veterinarians than we previously had. Certainly, as far as New York State is concerned, we have as many registered men now as we have ever had.

Looking at another side of the same matter, I think that I can safely say that, as far as our own college is concerned, our drastic limitation of enrollment has not kept out of the profession a great many men who would have been great assets to it. It is to be expected that the judgments of our Admission Committee often will be wrong, and doubtless we have excluded some very good men through errors in judgment. As far as our judgments

can be depended upon, even though we have accepted for admission only a fraction of those who have applied during the last two years, we think that in this group we have taken all of the outstanding candidates and have reached a little into the group of mediocrities in order to fill our quota. To put it the other way around, we do not think we have eliminated any but the poor and the mediocre.

While we have been limiting our enrollment, we have not lost sight of the fact that we have an obligation to furnish, as far as our staff and facilities will permit, enough practitioners to serve the state. We believe, for the present, that we are doing that. If it appears that more men are needed, we shall try to get support for a larger staff so that we may train more men as carefully as we are trying to train a smaller number now, and failing to get such support we shall have to lower our standards a little temporarily to take care of the need. The faculty of the Veterinary College has been given authority, by the trustees of Cornell University, to determine annually the number of students that shall be admitted, so that larger numbers may be admitted at any time when there seems to be a need for them. Knowing that we can give better instruction to thirty or forty students per class than we can to larger numbers, we think the state will be best served by limiting the matriculants to about this number, as long as larger numbers are not needed.

RECOGNITION OF THE PROFESSION BY THE PUBLIC

We hear a great deal of complaint that veterinary medicine is not receiving the public recognition that is its due. I agree with these complaints but I do not find myself in complete agreement with most of those who would do something about it. One cannot lift himself by his bootstraps, and neither can we, as a profession, do as much by direct publicity measures as some seem to think. Just as an individual cannot develop, by trumpet-blowing, a reputation for anything but trumpet-blowing, neither can a profession. Advancement in the esteem of the public will have to be gained gradually, and by acts rather than by words. The public forms its opinion of a profession largely by its opinion of the members of it that it knows best. A good, progressive veterinarian, competent, intelligent, well-educated, a public-spirited citizen, is the best possible advertisement that the profession can have in any community, and an ignorant, incompetent one that associates himself with the riff-raff and is seen too often hanging around the bar-room, can more than nullify any amount of other advertising in his community that the profession may do.

I believe that the profession has progressed further in the estimation of the public than many of us have realized. Veterinary medicine has received a great deal of favorable publicity in recent years from the more stringent requirements of the veterinary colleges. The public has learned surprisingly quickly that it is no longer possible to qualify for the profession quickly and easily, and the profession has immediately become more attractive to intelligent, well-prepared young men, who are looking about for a life's work, and to others who are looking at it from the sidelines. I would not like to leave the impression with you that I am not in favor of direct advertising of the profession. We should not be shrinking violets, nor hide our light under a bushel. We should take advantage of every opportunity to bring the accomplishments of the profession before the public in a dignified way. I do think, however, that more important than these things, and more permanently successful in bringing recognition to us, is the constant effort to improve our own qualifications for giving better service. Deeds speak louder than words.

In summing up, I have tried to emphasize my belief that the future progress of veterinary medicine in this country, and the improvement of the status of the profession in the public eye, are dependent upon our own efforts to improve the service that we are rendering. This entails the recruiting for the profession of a high class of men, and seeing to it that only well-prepared individuals are allowed to qualify. This is principally the job of those engaged in veterinary education, but the state licensing boards can do a great deal more than they have in the past in checking up on the products of the educators. A full realization that the trend of all medical thought today is toward prevention rather than cure, and that the initiation of programs of lay education leading in this direction is desirable, should be inculcated into the profession.

Phi Zeta

At a recent meeting of Alpha Chapter of Phi Zeta, honorary veterinary fraternity, the following students at the New York State Veterinary College at Cornell University were elected to membership: Francois X. Levesque '36, Martin H. Fremont '36, Dorsey W. Bruner '37 and Arnold Eder '37.

The annual initiation meeting of Beta Chapter (University of Pennsylvania) will be held on April 18, 1936 at the Penn Athletic Club, Philadelphia, Pa., at 7 p. m.



HEMODYNAMOMÉTRIE ET NOUVELLES MÉTHODES D'INSCRIPTION DE LA PRESSION SANGUINE—LES INJECTIONS INTRA-ARTÉRIELLES (Hemodynamometry and New Methods of Recording Blood Pressure — Intra-Arterial Injections). Louis Desliens. 553 pages, with illustrations. Vigot Frères, Paris, 1935.

This work is an unusual one from at least two principal points of view, namely, the author is a veterinary practitioner and the text is a contribution to the higher echelons of scientific medicine. Desliens is a plodding clinician, working under the ungrateful obstacles of an ordinary veterinary practice unaided by the convenient paraphernalia of an equipped laboratory. He dedicates his work to "good practitioners." "Hemodynamometry and New Methods of Recording Blood Pressure—Intra-Arterial Injections," the translated title, conveys but a mere hint of the depths to which the author takes the reader in laying open the bearing this physio-pathological study has on the practice of veterinary medicine.

The author modestly admits that he has "completed, confirmed, and rectified existing knowledge," but cannot by any display of bashfulness disguise the fact that he has added immensely to our conceptions of blood pressure and its modifications in health and disease. In short, the work of this plodding "home scientist" is remarkable, fantastic, profoundly interesting, and, obviously, extremely valuable when, in the future, the line of demarcation between the physiological and the pathological states has become more clearly defined and, therefore, more utilitarian in animal production and veterinary medicine.

Admittedly, hypertension and hypotension will never be as important among the short-lived subjects of the veterinary bailiwick as in the long-lived human subject, with his chain of deteriorating organs and functions expressed as heart disease, apoplexy, dropsies and kindred affections related to the cardiovascular retrogressions of declining life. So, *malgré* the finesse of the determinations, one wonders (in reading the first chapters) just how important blood pressure really is in veterinary clinical work where longevity is a minor factor in diagnostic work. The

fine work of Desliens turns the mind, at least the practitioner's, to that unanswered question, whatever may be the significance of blood-pressure variations in the finer fields of investigation. However, new knowledge is always worth while even when set aside for future utilization.

The author's technics in boldly puncturing important arteries transcutaneously is little less than audacious and let it not be forgotten, original, as far as one is able to determine the literature ordinarily available. Directions are given for puncturing the carotid of horses and cattle, the brachial artery of cattle, the facial and digital arteries of horses and the femoral of dogs, all of which, one is assured, can be accomplished transcutaneously without particular difficulty. Postoperative bleeding is insignificant if needles of small caliber are used. These procedures are utilized for three purposes: for intra-arterial medication, for determining accurately the arterial blood pressure, and for pharmacodynamic studies, to each of which the author devotes long chapters. From these three present alone, one may estimate the range of this contribution to physiological and pharmacological research.

Passing over long chapters on normal and abnormal hemodynamics, venous and cardiac pressure, vaso-motor reflexes, one comes upon a fund of new information on the action of most of the common drugs as determined by intra-arterial and intravenous injections which, in effect, is quite a revision of current conceptions in many material respects. Of special interest are the determinations on the dynamics of chloral, ether, chloroform, barbituric acid derivatives, morphine, eserine, arecoline, pilocarpine, atropine, yohimbine, cocaine, strychnine, apomorphine, nicotine, and many others. Judging from the fine character of the work and the author's flare for precision, the text is certainly an outstanding contribution to the sum of knowledge on the action and uses of the units comprising the conventional therapeutic arsenal.

"*Note complémentaire sur la transfusion sanguine*" is a 35-page treatment of the subject of blood transfusion for immunization and therapeutics with special reference to its use in foot-and-mouth disease, tetanus and the various anemias.

In the fear of doing injustice to the author, one shrinks before the task of reviewing this book. Its details are not all within the bournes of known facts nor of common knowledge and some of them blaze new fields. However, in view of Desliens' numerous contributions to subjects of the same genre, among which is his

work entitled, "Blood Transfusion in Animals," published in 1921; one seems justified in pronouncing this new work one of the classics of this century. Between its lines is emphasized the fact that mechanisms and functions of extreme importance in the practice of medicine are not sufficiently stressed in the conventional veterinary education, to be utilized beyond the hour of the final examination. Desliens' work illustrates how basic knowledge, instead of being augmented in the course of its application, yields to the more facile ways of empirical medicine, and how the graduate leaves much of value behind as he leaves the door of the college to go into the field of practice. In demonstrating what a practitioner can accomplish where the will to achieve is not lacking, this book is impressive. It differs from the "mine run" of technical books in having the flair of personally executed technics in every paragraph. It is more than a mere compilation with a few new facts added.

Notwithstanding that making much ado about blood pressure in our ordinary clinical work remains to be justified, that detail is but a small part of a voluminous masterpiece covering a broad field. To those interested in hematology, hemodynamometry, pharmacodynamics and blood transfusion, this book should be invaluable.

L. A. M.

PATHOLOGISCHE ANATOMISCHE DIAGNOSTIK AN TIERLEICHEN, MIT
ANLEITUNG ZUM SEZIEREN (Gross Pathology of Domestic Animals with Directions for Carrying Out a Necropsy). Dr. L. Lund, Professor of Pathological Anatomy in the Veterinary College at Hannover. 2nd Edition. 304 pages, with 131 illustrations. M. & H. Schaper, Hannover, 1935. Bound 22 R. M.

The second edition of Dr. Lund's Veterinary Pathology is welcome. The book has been thoroughly revised and brought up to date. It seems strange that we do not have in English a veterinary pathology which compares to a number of standard German works. Runnells' new book comes the nearest to filling this need. This latter text, however, is without illustrations. The textbooks of Kitt and Joest have been used by veterinary pathologists in this country for years. They are the authoritative works. Dr. Lund has written a book which compares favorably with these classical texts. The first eight pages of the book are devoted to statements in regard to taking portions for sections for microscopic examination, with a short discussion of some of the various fixatives used for this purpose. Twenty-one pages are next devoted to the external examination, that is, of the skin and its

appendages. Most of the remainder of the book is devoted to a discussion of the gross pathology of the organs of the thoracic and abdominal cavities, the brain, nervous system, glands of internal secretion and lymphatics, as well as the eye, ear, musculature, joints, bones, and blood-vessels. The last 30 pages are devoted to postmortem directions for various animals, as well as directions for the examination for specific diseases.

We would especially commend the illustrations in this text. They are well chosen and their reproduction is fine in nearly all cases. It is hardly fair to pick out any particular illustration but the picture of cyanotic induration of the liver of cattle on page 117 is most excellent, and that of chronic suppurative bronchial pneumonia in the bovine on page 205 is also outstanding.

We believe that there is a need in this country for a translation of this excellent book by Dr. Lund.

C. P. F.

TECHNIQUE SYSTÉMATIQUE DE L'INSPECTION DES VIANDES DE BOUCHERIE (Systematic Technic of Meat Inspection). L. Lafenêtre and P. Dedieu, Doctors of Veterinary Medicine. 408 pages, with 167 illustrations of which 58 are original. Vigot Frères, Paris, 1935.

This book is reviewed not with the temerity of a novice in that branch of veterinary medicine but from the viewpoint of acquiring, through its broad and far-reaching precepts, the knowledge a novice would evidently require to qualify properly as a meat inspector. In this frame of mind, one realized at once that the authors have added an excellent treatise to the literature. They are prominent meat and food inspectors, administrators of the art and teachers of the science in France where meat inspection, practiced with the view of protecting public health and at the same time conserving the property of the people to the best advantage of all concerned, is an age-old public service.

The work covers the subject meticulously and in a fascinating fashion. It makes interesting reading for any veterinarian and is certainly a valuable book for anyone specializing in that field. Meat inspection is emphatically underlined as a branch of veterinary medicine which, because of its multiple functions, requires additional studies and experience. Its successful execution, the authors point out, requires intelligence, order, a flair of sagacity, discipline, tact, circumspection, and a high degree of morale. To them meat inspection should be done by veterinarians aided only by helpers having a certain scientific training under capable

direction. The inspector himself is defined as "a citizen charged with a public service," whether a part-time or full-time official.

Chapter I describing, with the aid of many illustrations, the complete paraphernalia of a properly equipped meat inspector, will astonish the plebe who may not know that more than a keen eyesight and a butcher knife are needed to carry on. Here is described not only a large assortment of knives, each for its special use, but also the scabbards required for convenience and effective work, the glassware and pans, magnifying glasses, hand and compound microscopes, chromoscopes, pH reagents, electric lamps, meat grinders and presses, microtomes, incubators, and other necessities. In other chapters are described special accoutrements, including abattoir equipment contributing to the exactitude with which meat inspection should be conducted in justice to the owner and the public.

Chapter II points out that while the cardinal function of the meat inspector is to remove unwholesome and infectious meat and meat products from the marts of trade, it also furnishes valuable information on the control of contagious diseases in exposing the source of the animals found to be infected in the process of slaughtering. The grading of meat as to its nutritive value, its savor and its commercial value is another of the inspector's functions. Wholesome meat is not necessarily *ipso facto* acceptable for public consumption. Much depends upon its "intrinsic and substantial qualities," determined by the expert.

Chapters are devoted respectively to: systematic and special inspection of cattle, calves, lambs, sheep, kids, goats, swine, horses, refrigerated meat, foreign meat, meat of sick animals (febrile, anemic, emaciated, repugnant, toxic, slinks), confusing conditions, stamping and condemning, and the administration of a meat inspection bureau. In fact, the coverage is notably complete. Throughout, the book leaves the impression of having omitted no detail whereby the public health might be endangered. In countries where sick or injured animals are sent to the municipal abattoir in order that their carcasses or parts may be conserved for food, meat inspection, conscientiously done, is truly a fine art. The responsibility of the inspector is great, as these authors so clearly emphasize.

L. A. M.

Stranger: "Ain't your old mule afraid of an automobile?"

Native: "Why should he be? He doesn't know anything about how much it costs to run one."

ABSTRACTS

EFFECTIVENESS OF HOT HYPOCHLORITES OF LOW ALKALINITY ON DESTROYING *MYCOBACTERIUM TUBERCULOSIS*. S. M. Costigan, J. W. Yates, W. A. Hadfield and E. C. McCulloch. *Jour. Bact.*, xxxi (1935), p. 6.

The growths from two-month-old cultures of a human strain of *Mycobacterium tuberculosis* were washed from solid media with normal saline and the suspension standardized so that the addition of 2 cc of the organism suspension to 20 cc of disinfectant dilution would yield 20,000,000 organisms in each cubic centimeter withdrawn for inoculation into guinea pigs. Each dilution of hypochlorite was maintained at its designated temperature for a short period before the organism suspension was added. At intervals of $\frac{1}{2}$, 1, $2\frac{1}{2}$ and 5 minutes, 2 cc was withdrawn and divided between two centrifuge-tubes, each containing 5 cc of N/10 sodium thiosulfate to neutralize any remaining hypochlorite. After centrifuging, the sediment was injected into the left inguinal region of a guinea pig. The guinea pigs were autopsied at the end of ten weeks. The data indicate that hypochlorites in a concentration to yield 50 parts of available chlorine per million kill *M. tuberculosis* in $2\frac{1}{2}$ but not in one minute when exposed at 50°C ; in 60 but not in 30 seconds at 55°C and in 30 seconds or less at 60°C . Solutions containing 200 parts of available chlorine per million kill in 60 but not in 30 seconds at 50°C and in 30 seconds or less at 55°C and 60°C .

THE SUSCEPTIBILITY OF SWINE TO THE VIRUS OF HUMAN INFLUENZA. Richard E. Shope. *Jour. Bact.*, xxxi (1936), p. 31.

Swine inoculated intranasally with the virus of human influenza develop an ill-defined, mild and usually afebrile illness of short duration. At postmortem the anterior lobes of the lungs of such animals contain scant, scattered areas of lobular atelectasis. Transmission of the virus for five serial passages through two groups of swine has failed noticeably to enhance the activity for this species. Virus pathogenic for mice was demonstrated in the involved lung of each passage animal. The clinical and path-

ological picture presented by swine infected with the virus of human influenza is similar to that caused by the virus of swine influenza. If the virus is administered intranasally under ether narcosis, a somewhat more severe illness is produced and the pulmonary lesions are more extensive. Swine inoculated intranasally with the virus of human influenza and a small amount of a culture of *Hemophilus influenzae suis* develop a febrile, prostrating illness similar to swine influenza. The pneumonia encountered at autopsy of such animals is similar, though somewhat less extensive as a rule, to that seen in swine influenza. Swine recovered from infection with the virus of human influenza are resistant to swine influenza. The sera of such animals do not neutralize the virus of swine influenza.

ON THE GROUP SPECIFIC "A" SUBSTANCE IN HORSE SALIVA. K. Landsteiner. Jour. Exp. Med., lxiii (1935), p. 185.

The chemical composition and properties of the horse saliva preparation is essentially, at least, carbohydrate in nature and is very similar to the preparation separated by Freudenberg from human urine. The substance gives negative reactions with almost all protein reagents, yields on hydrolysis a high percentage of reducing sugars, contains about 10 per cent acetyl and gives positive reactions for glucosamine and galactose. The preparation isolated was found to be highly active serologically and it appears to be polysaccharide in nature.

STUDIES ON THE ETIOLOGY OF RABBIT-POX. I. Isolation of a filtrable agent; its pathogenic properties. Louise Pearce, Paul D. Rosahn and Ch'uan-K'uei Hu. Jour. Exp. Med., lxiii (1935), p. 241.

A filtrable agent was isolated from seven cases of spontaneous rabbit-pox by intratesticular injection in rabbits by a variety of tissues. The virus was transmitted for 15 consecutive testicle-to-testicle passages in rabbits by Berkefeld V filtrates of testicular tissue emulsions. Unfiltered emulsions were more potent than filtrates. The virulence of the virus was maintained by ice-box storage of infected tissues for as long as 127 days. Two types of reactions were produced in rabbits by the inoculation of tissue virus emulsions. An acute, fulminating, rapidly fatal condition regularly developed, the outstanding features of which were a massive hemorrhagic orchitis with marked scrotal edema, fever and death within a week. In the second type the animal survives a week or longer. The reaction was characterized by the develop-

ment of a disease syndrome with adversity of clinical manifestations which was indistinguishable from spontaneous rabbit-pox.

STUDIES ON THE ETIOLOGY OF RABBIT-POX. II. Clinical characteristics of the experimental induced disease. Paul D. Rosahn, Ch'uan-K'uei Hu and Louise Pearce. *Jour. Exp. Med.*, lxiii (1935), p. 259.

Clinical manifestations and the course of the disease observed in experimental rabbit-pox are described. Besides the acute, fulminating type a second type of disease was noted in which the survival time was longer, the animals manifesting a variety of clinical manifestations and a considerable portion of the cases recovering. The most conspicuous symptom was a generalized papular eruption of the skin and mucocutaneous borders. The production of the disease was associated with routes of inoculation other than the intratesticular or with a small dosage. Pronounced cutaneous reactions resulted from intradermal injection and there was a marked clinical manifestation after intravenous inoculation. Lesions often failed to localize in the lines of scarification of skin and cornea even in cases with a profuse cutaneous eruption. The clinical manifestations and the course of the disease of experimental rabbit-pox was indistinguishable from cases of spontaneous pox.

SOME STUDIES OF INFECTIOUS LARYNGOTRACHEITIS. THE CONTINUED PROPAGATION OF THE VIRUS UPON THE CHORIO-ALLANTOIC MEMBRANE OF HEN'S EGG. C. A. Brandly. *Jour. Inf. Dis.*, lvii (1935), p. 201.

Continued egg to egg transfer of the virus of laryngotracheitis may be accomplished without encountering contamination. In this manner a highly potent pure virus may become available. Egg virus is well suited for the study of the mechanism of immunity and for use in *in vitro* serological tests. Large quantities of pure virus may be economically produced for the vaccination of chickens by the cloacal method. Greater accuracy in titrations of the virus may reasonably be expected by employing the developing egg rather than the chicken. The developing egg provides a completely isolated organism ideally adapted and highly valuable for study where minimal facilities and equipment are available. Marked variation in the extent of infection of the chorio-allantois as well as in the survival time of the embryo were encountered. Factors accounting for such differences are: (1) slight variations and inaccuracies in the technic of introducing the virus, (2)

inconsiderable differences in the degree of trituration effected with different lots of virus, and (3) variations in the environment to which the eggs are submitted during incubation.

THE PATHOGENICITY OF BRUCELLA ABORTUS FOR WHITE MICE

William H. Feldman and Carl Olson, Jr. Jour. Inf. Dis., lvii (1935), p. 212.

Three different strains of *Brucella abortus (bovis)* and three of *Br. abortus (suis)* proved pathogenic for white mice. Practically all of the animals survived the respective period of the experiment, the longest being 70 days. *Br. abortus* was recovered from the spleen of 28 animals, or approximately 83 per cent of the 34 animals in which recovery was attempted. Brucella agglutinins of significant titre occurred in nearly all of the animals whose blood was tested. Although grossly visible evidence of a diseased state infrequently occurs, rather characteristic lesions of the kidneys and liver and less frequently of the spleen, testes and epididymes, may be observed microscopically. White mice should be satisfactory animals for the isolation of *Br. abortus* from spontaneously infected material.

THE CHEMICAL SEPARATION AND BIOLOGICAL ACTIVITY OF THE POLYSACCHARIDE CONSTITUENT IN BRUCELLA CELLS. A. D. Hershey, I. Forest Huddleson and R. B. Pennell. Jour. Inf. Dis., lvii (1935), p. 183.

The preparation by Favilli and Biancalani of a specific precipitating polysaccharide fraction from *Brucella abortus* by prolonged heat extraction was confirmed. From the crude preparation a non-polysaccharide precipitating substance was separated. A similar precipitating substance was prepared by cleavage from a non-polysaccharide antigen of *Brucella* cells. Its relation to the various soluble specific fractions of *Brucella* is suggested. The precipitating properties of the polysaccharide prepared according to the method of Favilli and Biancalani appear to be due to a non-polysaccharide contaminant.

EXPERIMENTAL LESION CAUSED BY TRICHOMONAS COLUMBAE IN THE CHICKEN. Arnoldo Gabaldon and Justin Andrews. Jour. Parasitol., xxi (1935), p. 451.

In these experiments 0.5 cc of a four-day-old bacteria free culture of *Trichomonas columbae* was injected into the breast

muscles of a pigeon and four chickens of 45 grams weight. Five days later, the animals were killed and the sites of inoculation searched for lesions and trichomonads. The pigeon and one chicken showed typical necrotic abscesses with yellowish pus and many flagellates. Three chickens did not have any lesions. Four young rats of 58 and 70 grams weight, inoculated with the same amount of the same culture in the muscles of the hind leg, did not show any lesions when killed. Experimental lesions have already been induced in the pigeon, mice and turkey.

CULTURAL AND MICROSCOPIC DIAGNOSIS OF TRICHOMONAS FOETUS INFECTION IN CATTLE. Justin Andrews, Kathel and Dale A. Porter. *Jour. Parasitol.*, xxi (1935), p. 452.

Heifers were examined each week by introducing a speculum into the vagina, washing the walls with the fluid part of Locke-egg-blood medium, returning the aspirated washings to the egg slant and by immediately examining under the microscope the material adhering to the speculum after it was withdrawn. More positive results were obtained when the cultures were examined the following day. Neither the cultivation, microscopic examination nor combination of both can be depended upon to show all of the positive cases. In the long run the combination did not yield a significantly higher incidence of positives than either single method. The Locke-egg-blood-serum mixture appeared to be more efficient in detecting infections than did the Locke-egg-blood medium.

THE INFLUENCE OF DIET ON THE GLUCOSE TOLERANCE OF THE DOG. Esther M. Greisheimer and F. W. Hoffbauer. *Jour. Nutri.*, x (1935), p. 525.

The effects of high protein, high fat and high carbohydrate diets were studied, the animals being placed back on the balanced diet after each experimental diet. The effects of different percentages of high protein and high fat diets were also studied. After seven days on a balanced diet, there was little change in the fasting sugar, regardless of the type of diet which had been used before the balanced diet. The half-hour level was higher if high fat or high carbohydrate had been used before the balanced diet. These diets apparently had some residual effect. There is a definite decrease in tolerance for glucose while on a high protein and high fat diet. The effect below 24.1 per cent protein was not noticeable. The differences in glucose tolerance are sup-

posedly not due to differences in the rate of absorption. The author points out the difficulty of interpreting various results due to the extreme variation in individual animals.

THE COMPARATIVE RACHITOGENIC PROPERTY OF OATS AND CORN.

Lawrence L. Lachat and LeRoy S. Palmer. *Jour. Nutri.*, x (1935), p. 565.

Hydrochloric acid extracts of oats, when purified and freed from excessive amounts of sodium chloride may exhibit rachitogenic properties when fed to rats in a mildly rachitogenic ration but not when the ration is severely rachitogenic. Rolled oats and yellow corn are rachitogenic to both rats and chicks, especially to the latter, and rolled oats appear to be more rachitogenic when the rations are otherwise only mildly rickets-producing or the susceptibility of the animals is low. Divergent results obtained by others in the study of the relative rachitogenic property of oats and other cereals probably may be explained by lack of control of the severity of the rickets produced by the ration with which the cereal rations have been compared.

THE EFFECT OF THE INGESTION OF SALINE WATERS UPON THE pH OF THE INTESTINAL TRACT, THE NITROGEN BALANCE AND THE COEFFICIENT OF DIGESTIBILITY. V. G. Heller, J. R. Owen and Lucile Postwood. *Jour. Nutri.*, x (1935), p. 645.

The use of drinking waters containing considerable quantities of dissolved salts does not interfere with the nitrogen utilization of normal rations for rats, chickens and hogs. Likewise the apparent coefficient of digestibility of the constituents of the ration are not interfered with. The trend of all determinations indicates that assimilation or digestion is aided by the presence of reasonable amounts of salt as long as the total content is kept below the concentration where various disturbances in growth and reproduction take place. The pH of the entire intestinal tract is not appreciably altered by the presence of alkali or acid salts in the drinking water providing the concentration present does not exceed the amount permitting a somewhat normal life.

Haile Selassie, emperor of Ethiopia, owns 57 lions that stroll with him in the palace gardens.

PUBLICATIONS RECEIVED

Six Years' Experience with a Herd Experimentally Infected with Johne's Disease. W. A. Hagan and Alexander Zeissig. Reprint from *Corn. Vet.*, xxiii (1933), 1, pp. 1-15.

Differentiation Between Gram-Positive and Gram-Negative Microorganisms by the Use of Enzymes. D. W. Bruner. Reprint from *Jour. Bact.*, xxvi (1933), 4, pp. 361-371.

Erythrocyte, Leucocyte and Hemoglobin Determinations on the Blood of Cattle, with a Note on the Blood in Johne's Disease. W. T. Miller. Reprint from the Annual Report of the New York State Veterinary College at Cornell University for the year 1932-1933, pp. 71-80.

Influence of Nutritive Conditions on Acid-Fastness of Bacteria. Dorsey W. Bruner. Reprint from the *Jour. Inf. Dis.*, lv (1934), pp. 26-38.

A Study of Variation of *Salmonella pullorum*. H. Van Roekel. (Bul. 319. Mass. Agr. Exp. Sta., Mar., 1935. pp. 60. Illus.)

Iowa State College, Twenty-Year Development Program, Part VI, Proposed for the Division of Veterinary Medicine. (Ames, Iowa, 1935. pp. 73. Illus.)

The Whole Blood Agglutination Test for Pullorum Disease. H. Van Roekel and M. K. Clarke. (Bul. 323. Mass. Agr. Exp. Sta., July, 1935. pp. 24. Illus.)

Pullorum Disease in Massachusetts, Fifteenth Annual Report on Eradication of Poultry Disease Control Laboratory. (Bul. 78. Mass. Agr. Exp. Sta., July, 1935. pp. 12.)

Vaccination Against Johne's Disease. W. A. Hagan. Reprint from *Corn. Vet.*, xxv (1935), pp. 345-353.

Diseases of Young Calves: A Bacteriological Examination of 100 Cases. Reginald Lovell and D. Leslie Hughes. Reprint from *Jour. Comp. Path. & Therap.*, xlvi (1935), 4, pp. 267-284.

Studies on Bovine Mastitis. XI.—Further Observations on the Control of Chronic Streptococcus Mastitis. A. W. Stableforth, S. J. Edwards and F. C. Minett. Reprint from *Jour. Comp. Path. & Therap.*, xlvii (1935), 4, pp. 300-315.

Mescalbean (*Sophora secundiflora*) Poisonous for Livestock. (Bul. 519. Texas Agr. Exp. Sta., Dec., 1935. pp. 18. Illus.)

Livestock Loss Prevention. Robert F. Sellar. (American Humane Association, Albany, N. Y., 1935. pp. 26. Illus.)

Michigan State College of Agriculture and Applied Science. Division of Veterinary Science, Report of the, 1934-1935. (East Lansing, Mich., 1935. pp. 63. Illus.)

Bureau of Animal Industry, U. S. Department of Agriculture. Report of the Chief, 1935. (Washington, D. C., 1935. pp. 55. Price, 5c.)

Surgeon General, U. S. Army, Report of the, 1934-1935. (Washington, D. C., 1935. pp. 200. Illus. Price, 15c.)

Horse and Mule Association of America, Report of the 16th Annual Meeting of the. (Chicago, Ill., 1935. pp. 20. Illus.)

National Research Council. Organization and Members, 1935-1936. (Washington, D. C., 1936. pp. 68.)

Kansas State College Bulletin. A Twenty-Year Program. (Manhattan, Kan., 1936. pp. 46. Illus.)

Horse and Mule Power in American Agriculture. (Book 222. Horse and Mule Association of America, 1936. pp. 72. Illus. Price, 10c.)



Regular Army

Each of the following-named first lieutenants of the Veterinary Corps is relieved from further detail as student, Medical Field Service School, after his name, effective in time to proceed to Washington, D. C., and report to the commanding general, Army Medical Center, on or about August 28, 1936, for duty for the purpose of pursuing a course of instruction at the Army Veterinary School.

Velmer W. McGinnis, Fort Leavenworth, Kan.

Daniel S. Stevenson, Fort Hoyle, Md.

James B. Nichols, Fort Oglethorpe, Ga.

Each of the following-named first lieutenants of the Veterinary Corps is relieved from further detail as student, Medical Field Service School, Carlisle Barracks, Pa., effective in time to proceed to Washington, D. C., and report to the commanding general, Army Medical Center, on or about August 28, 1936, for duty for the purpose of pursuing a course of instruction at the Army Veterinary School.

Bernard F. Trum

John H. Rust, 3rd

Andrew J. Sirilo

1st Lieut. Lloyd C. Tekse, is relieved from duty at Fort Francis E. Warren, Wyo., effective in time to comply with this order; is assigned to the Army Medical Center, Washington, D. C.; will proceed at the proper time to San Francisco, Calif., and sail on the transport scheduled to leave that port on or about August 11, 1936, for New York, N. Y., and upon arrival in New York City, will proceed to Washington, D. C., and report to the commanding general, Army Medical Center, for duty for the purpose of pursuing a course of instruction at the Army Veterinary School.

Major George L. Caldwell is relieved from further assignment and duty as student, the Quartermaster Corps Subsistence School, Chicago, Ill., effective in time to comply with this order, will then proceed to Washington, D. C., and report not later than June 30, 1936, to the Surgeon General for duty in his office.

Major Oness H. Dixon, Jr., is relieved from further assignment and duty as student, the Quartermaster Corps Subsistence School, Chicago, Ill., and directed to proceed to Fort Benning, Ga., and report not later than June 30, 1936, to the commanding general for duty.

Captain Charles S. Greer is relieved from further assignment and duty at the remount purchasing and breeding headquarters, Lexington, Ky., and additional duty at the University of Kentucky, Lexington, Ky., effective in time to proceed to the Robinson quartermaster depot, Fort Robinson, Neb., and report not later than June 30, 1936, for duty.

Major Charles O. Grace is relieved from further assignment and duty at Fort Benning, Ga., effective in time to proceed to Lexington, Ky., and report not later than June 30, 1936, to the commanding officer, remount purchasing and breeding headquarters, for duty.

Veterinary Reserve Corps

NEW ACCEPTANCES

PROMOTIONS

Aitken, Howard M.	1st Lt..	Garden Acres, R. 5, Springfield, Ohio.
Aldrich, Percy M.	1st Lt..	6644 Yale Ave., Chicago, Ill.
Bailey, Leonard P.	1st Lt..	509 S. Main St., Piqua, Ohio.
Barver, Percival G.	1st Lt..	291 Main St., Wakefield, R. I.
Barnes, Carl G.	1st Lt..	Laceyville, Pa.
Barnes, Lloyd D.	1st Lt..	204 Noble St., Kutztown, Pa.
Barnes, Mansel O.	1st Lt..	Box 26, Kennewick, Wash.
Barsky, David	1st Lt..	72 Rugby Rd., Buffalo, N. Y.
Batchelder, Ray M.	1st Lt..	816 Chestnut St., Ashland, Ohio.
Bauer, Walter Oliver	1st Lt..	119 Park Ave., Watertown, N. Y.
Bean, Robert L.	1st Lt..	Route 1, Box 77, Littleton, Colo.
Bender, Jack D.	1st Lt..	2117 W. Ashwood Ave., Nashville, Tenn.
Benedict, Walter L.	1st Lt..	383 Chestnut St., Oneonta, N. Y.
Bixby, Donald O.	1st Lt..	Norfolk, N. Y.
Blostein, Morris E.	1st Lt..	505 Grand Central Ave., Horse- heads, N. Y.
Bond, Thomas L.	1st Lt..	Cumberland, Iowa.
Bruce, Ronald H.	1st Lt..	925 Washington St., Norwood, Mass.
Caslick, Edward A.	1st Lt..	211 E. 8th St., Paris, Ky.
Chastain, Ernest F.	1st Lt..	Gazelle, Calif.
Clark, Virgil H.	1st Lt..	3103 Hascall St., Omaha, Neb.
Cole, Harry L.	1st Lt..	1902 N. Mich. Ave., Saginaw, Mich.
Coppole, Bernard I.	1st Lt..	1610 Main St., Boise, Idaho.
Cox, Forrest O.	1st Lt..	Blue Rapids, Kan.
Cox, John L.	1st Lt..	2365 Warren St., Toledo, Ohio.
Daut, William F., Jr.	1st Lt..	Newberg, Ore.
Davis, Robert W.	1st Lt..	1928 17th St., Bakersfield, Calif.
Dorrrough, Bill	1st Lt..	3000 4th Ave., S., Leeds, Ala.
Earhart, Robert N.	1st Lt..	342 W. Ninth Ave., Columbus, Ohio.

Ebertz, Charles D.	1st Lt...	Wayland, N. Y.
Eggert, William E., Jr.	1st Lt...	89 Washington Place, Ridgewood, N. J.
Evans, Lewis W.	1st Lt...	609 Jefferson Ave., La Porte, Ind.
Evans, William M.	1st Lt...	511 E. Buffalo St., Ithaca, N. Y.
Fechner, Herbert H.	1st Lt...	Syracuse, Neb.
Foster, Edwin N.	1st Lt...	1252 Seneca St., Far Rockaway, N. Y.
Frock, Irvin W.	1st Lt...	Manchester, Md.
Garrett, Thomas W.	1st Lt...	R. 1, Box 103, Crows Landing, Calif.
Gillie, George W.	Capt...	412 Calhoun St., Fort Wayne, Ind.
Ginn, William	1st Lt...	Edgefield, S. C.
Globus, Robert	1st Lt...	758 Boswell Ave., Norwich, Conn.
Gloss, Ellis H.	1st Lt...	Gaylord, Minn.
Goldhaft, Tevis M.	1st Lt...	East Landis Ave., Vineland, N. Y.
Goldsmith, Charles A.	1st Lt...	RFD 2, Chester, N. H.
Gomez, Frank D.	1st Lt...	718 El Camino Real, San Carlos, Calif.
Goodfellow, William A.	1st Lt...	905 W. Loucks St., Sheridan, Wyo.
Grey, Charles G.	1st Lt...	2200-19th St., N. W., Washington, D. C.
Groppe, Carl W.	1st Lt...	Stamms Lane, Wheeling, W. Va.
Hagler, Curtis E.	1st Lt...	3645-45th Ave., S. W., Seattle, Wash.
Hancock, Amor E.	1st Lt...	122 E. Main St., Lancaster, Ohio.
Harrison, Joseph W.	1st Lt...	722 State Office Bldg., Lansing, Mich.
Hein, Hubert R.	1st Lt...	Box 143, Washington, Kan.
Hendricks, Stanley L.	1st Lt...	Watertown, Minn.
Henson, William R.	1st Lt...	Shelby, Ohio.
Herd, Dwight	1st Lt...	Rural Route 1, East Liberty, Ohio.
Hooyt, Frederick J.	1st Lt...	2 Knight St., Glens Falls, N. Y.
Hooyt, Kenneth R.	1st Lt...	Enterprise, Ore.
Hummon, Ormond J.	1st Lt...	Leipsic, Ohio.
Hutt, Samuel	1st Lt...	164 Parkside Ave., Brooklyn, N. Y.
Inman, Archie R.	1st Lt...	Box 1086, Sacramento, Calif.
Ishee, Vaughn E.	1st Lt...	Middlefield, Ohio.
Jerstad, Arthur C.	1st Lt...	Route 2, Box 409, Tacoma, Wash.
Johnson, Samuel A.	1st Lt...	Broad St., Kinderhook, N. Y.
Juen, Henry T.	1st Lt...	Rural Route 1, Box 99, El Paso, Texas.
Kennelly, Edward M.	1st Lt...	P. O. Box 416, White Plains, N. Y.
Kingman, Harry E., Jr.	1st Lt...	P. O. Box 1086, Sacramento, Calif.
Knudson, Robert L.	1st Lt...	State House, Augusta, Me.
Koch, Bernard	1st Lt...	621 W. Lombard St., Baltimore, Md.
Koudelka, Thomas P.	1st Lt...	Reedsdale, Wis.
Kral, James	1st Lt...	5210 S. 20th St., Omaha, Neb.
Lancaster, Harry R.	1st Lt...	326 Post Office Bldg., Baton Rouge, La.
Latshaw, Clifton	1st Lt...	149 E. Washington St., Shelbyville, Ind.
Lavender, James Blaine	1st Lt...	1981 Park St., Lincoln, Neb.
Leenerts, Theodore H.	1st Lt...	Box 2522, Reno, Nev.
Levy, Milton C.	1st Lt...	600 Fall St., San Francisco, Calif.
Libby, Leslie R.	1st Lt...	Route 2, Box 486, Sebastopol, Calif.
Lindley, William H.	1st Lt...	Elm St., Lawrenceburg, Ind.
Live, Israel	1st Lt...	University of Pennsylvania, Philadelphia, Pa.

Lormore, Robert E.....1st Lt...3 Wisteria Ave., Oneonta, N. Y.
Lucich, Frank1st Lt...517 E. 3rd St., Cle Elum, Wash.
McCarthy, John F.....1st Lt...34 Railway Ave., Cortland, N. Y.
McCormick, Hugh C.....1st Lt...821 Wealthy St., S. E., Grand
Rapids, Mich.
McCreary, Andrew J.....1st Lt...244 Evergreen Ave., Brewton, Ala.
McGee, George M.....1st Lt...Baker Hill, Ala.
Maike, Arthur A.....1st Lt...Rural Route 4, Fremont, Ohio.
Mauney, Jacob P.....1st Lt...204 Gaston St., Kings Mountain,
N. C.
Merenda, Joseph J.....1st Lt...Glen Head, L. I., N. Y.
Mindell, Jack1st Lt...716 State St., Schenectady, N. Y.
Muxlow, Thomas J.....1st Lt...Portal, N. Dak.
Neuenschwander, Leroy F.....1st Lt...Attica, Ohio.
Newman, Leonard L.....1st Lt...Thorpe, Wash.
Niemann, Karl W.....1st Lt...121 S. Hamilton, Madison, Wis.
Olmsted, Richard C.....1st Lt...43 Greene St., Catskill, N. Y.
Olson, Carl, Jr.....1st Lt...New York State Veterinary Col-
lege, Ithaca, N. Y.
Omdalen, Rudolph O.....1st Lt...Box 295, Danville, Ky.
O'Neil, Henry E.....1st Lt...22 Boulevard, Hudson Falls, N. Y.
Parker, CarlMajor...734 S. West Blvd., Kansas City,
Kan.
Parshall, Charles J.....1st Lt...General Delivery, Brentwood,
Calif.
Pass, Albin G.....1st Lt...713-14 Peoples State Bank Bldg.,
Frankfort, Ky.
Pastors, Charles R.....1st Lt...Rayland, Ohio.
Patton, John A.....Major...144 W. Duluth Station, Duluth,
Minn.
Peck, Eugene W.....1st Lt...Falls City, Neb.
Peters, Max R.....1st Lt...1616 Columbus Ave., Sandusky,
Ohio.
Peterson, Alfred1st Lt...110½ S. Broadway, Crookston,
Minn.
Phipps, Edward C.....1st Lt...332 S. 4th St., Paducah, Ky.
Prechal, Charles F.....1st Lt...4112 S. 12th St., Omaha, Neb.
Prechal, Charles J.....1st Lt...5434 S. 22nd St., Omaha, Neb.
Price, Willet J.....1st Lt...1120 8th St., Woodward, Okla.
Purse, William J.....1st Lt...8043 Wornall Rd., Kansas City,
Mo.
Putnam, John L.....1st Lt...Box 4921 E. Liberty, Pittsburgh,
Pa.
Putnam, Karl E.....1st Lt...Main St., Prattsburg, N. Y.
Rackley, Ernest W.....1st Lt...646 Washington Ave., Macon, Ga.
Ranney, Albert F.....1st Lt...16 Prospect St., Montpelier, Vt.
Richardson, Frederick H.....1st Lt...527 Canton St., Ogdensburg, N. Y.
Richardson, Leonard R.....1st Lt...125 N. Chestnut St., Ravenna,
Ohio.
Rockey, William H., Jr.....1st Lt...Box 1086, Sacramento, Calif.
Ross, Paul D.....1st Lt...Greensboro, Md.
Rush, Loyal L.....1st Lt...Erie, Kan.
Schantz, Lansing C.....1st Lt...Care Hay Veterinary Clinic, Al-
bany, Ga.
Schulz, Carl W.....1st Lt...1412 N. Liberty St., Independence,
Mo.
Sears, Richard M.....1st Lt...42 Sullivan St., Cazenovia, N. Y.
Shaw, William S.....1st Lt...Springvale, Me.
Sherer, Kenneth B.....1st Lt...1124 W. State St., Fremont, Ohio.
Smith, Claude A.....1st Lt...Rural Route 2, Hudson, Mich.

Smith, Robert M.	1st Lt.	West Washington St., Jamestown, Ohio.
Snyder, Arnold M.	1st Lt.	4054 Pechin St., Roxborough, Philadelphia, Pa.
Stafford, Charles D.	1st Lt.	2500 16th St., San Francisco, Calif.
Stanton, Louis E.	1st Lt.	308 W. Ashley St., Jackson, Minn.
Storey, Ensl R.	1st Lt.	109 W. D. St., Grants Pass, Ore.
Stern, Aaron	1st Lt.	1046 Broad St., Meriden, Conn.
Sternfels, Mark	1st Lt.	97 Arden St., New York, N. Y.
Swanson, Raymond V.	1st Lt.	RFD 1, Pocatello, Idaho.
Tegg, Montgomery A.	1st Lt.	216 Carling Rd., Rochester, N. Y.
Tabbut, Herbert M.	1st Lt.	23 Forest St., Wellesley Hills, Mass.
Taylor, Rex	1st Lt.	44 S. 4th St., San Jose, Calif.
Treat, Lester A.	1st Lt.	114 Mill St., Bennington, Vt.
Tucker, Carl C.	1st Lt.	309 S. Buffalo St., Warsaw, Ind.
Van Roekel, Henry	1st Lt.	19 Hallock St., Amherst, Mass.
Waddell, William H., Jr. (c)	1st Lt.	Tuskegee Institute, Ala.
Wilder, Claude O.	1st Lt.	Sylvania, Ga.
Witt, Raymond F.	1st Lt.	1253 Main St., Worcester, Mass.

NEW ASSIGNMENTS TO ACTIVE DUTY WITH CCC

Morse, Joseph B.	1st Lt.	Hd. 3rd Corps Area, Baltimore, Md.
Clark, Virgil H.	1st Lt.	Fort Crook, Neb.
Prchal, Charles F.	1st Lt.	Fort Snelling, Minn.
Reineccius, Jake L.	1st Lt.	Fort Snelling, Minn.
Hoyt, Kenneth R.	1st Lt.	Seattle Q. M. Depot, Seattle, Wash.

TERMINATION OF ASSIGNMENT TO ACTIVE DUTY

Bentham, Wilfred S.	1st Lt.	Fort Missoula, Mont.
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Notice of Examination for Appointments in the Veterinary Corps, Regular Army

The War Department has announced a competitive examination, July 6-11, 1936, inclusive, for the purpose of qualifying doctors of veterinary medicine for appointment as First Lieutenants, Veterinary Corps, to fill existing and anticipated vacancies during the fiscal year 1937.

Applicant must be a male citizen of the United States between the ages of 23 and 32 years, and a graduate of a recognized veterinary college.

Bureau Transfers

DR. JAMES A. SLUSS (Ind. '20), from Knoxville, Tenn., to Bristol, Va., in charge of meat inspection.

DR. R. W. CULBERT (McK. '08), from Baltimore, Md., to Saint Louis, Mo., in charge of meat inspection.

DR. JEFFERSON ROBINSON (K. C. V. C. '15), from Jacksonville, Ill., to Tifton, Ga., on meat inspection.

DR. C. H. HERROLD (O. S. U. '04—McK. '05), from Dayton, Ohio, to Indianapolis, Ind., in charge of meat inspection.

DR. C. L. ELLIOTT (Iowa '02), from Indianapolis, Ind., to Kansas City, Mo., on stock yards inspection.

MISCELLANEOUS



Doctor Joss Heads Meat Inspection Service

On March 16, Dr. Edward C. Joss (Chi. '02) became chief of the Meat Inspection Division of the U. S. Bureau of Animal Industry, succeeding Dr. A. J. Pistor, whose death occurred on January 26.



DR. EDWARD C. JOSS

Dr. Joss, a native of Kansas, entered the service of the B. A. I. in 1902 as an assistant inspector assigned to meat inspection. Three years later, he became inspector-in-charge at Tacoma, Wash. Since that time, he has been in charge of the stations at Portland, Ore., and New York City, in addition to occupying

other important posts. One of these was that of travelling inspector in the western area, an assignment which involved the supervision of meat inspection in ten states.

On one occasion, Dr. Joss was sent to Australia and New Zealand, where he became familiar with the extensive live stock industry and methods of veterinary inspection maintained in those countries. At another time, he was sent to the arctic regions of Alaska to make investigations of the reindeer industry. In 1925, he was assigned to administrative work in Washington as an assistant chief of the Meat Inspection Division.

Doctor Totten Feted by Chicago B. A. I. Force

Dr. George E. Totten (Chi. '98), who has been in charge of meat inspection for the U. S. Bureau of Animal Industry at Chicago since 1932, has been transferred to Washington, D. C., where he became assistant chief of the Meat Inspection Division on March 16. Dr. Totten has been in the B. A. I. service since 1899. Before his transfer to Chicago, he held a number of important assignments, including that of inspector-in-charge at South Saint Paul, Minn. While at this station, Dr. Totten coöperated with the Mayo Foundation at Rochester, Minn., by providing material for an extensive collection of animal tumors, which were used for scientific work and the gathering of pathological data.

On March 12, Dr. Totten was feted at a banquet held at the Auditorium Hotel in Chicago. The occasion was a farewell tribute to Dr. Totten by his Chicago associates on the eve of his departure for Washington. The dinner was attended by 116 members of the Bureau staff in Chicago. Following an exceptionally good dinner, brief addresses were made by Mr. N. S. Clagg, toastmaster of the evening, and by Dr. Edward Himsel (Cin. '13), who was Dr. Totten's assistant inspector-in-charge at Chicago. The remainder of the program of the evening was in the hands of seven professional entertainers, who, with their singing, dancing, and repertoire of merry-making, provided a most enjoyable evening for those present.

All of Dr. Totten's friends and associates in Chicago deeply regret his leaving their midst, but they find consolation in knowing that he has been advanced to a more important and responsible position in the Bureau service. Dr. Totten will be missed in Chicago, where he gained the respect and admiration of his associates with his innate kindness, his keen and sympathetic



DINNER IN HONOR OF DR. G. E. TOTTEN, AUDITORIUM HOTEL, CHICAGO, ILL., MARCH 12, 1936.

understanding of human nature, and by his fair and square treatment of all. He goes to his new assignment with the sincere best wishes of the entire Bureau staff in Chicago for his continued good health, happiness and success in his new position.

J. S. B.

Doctor Schoening Made an Assistant Chief

The appointment of Dr. Harry W. Schoening (U. P. '07), chief of the Pathological Division of the U. S. Bureau of Animal Industry, as an assistant chief of the Bureau, was announced on March 16. Dr. Schoening will continue as chief of the Pathological Division, but will devote part of his time to administrative duties in connection with research projects on animal diseases being conducted by the Bureau. Dr. A. W. Miller (K. C. V. C. '01), the other assistant chief of the Bureau, and an authority on regulatory work, continues in charge of administering the Packers and Stockyards Act.

Dr. Schoening has been in the Bureau service since 1907. His first assignment was on meat inspection but, five years later, he was transferred to the Pathological Division. He was a member of the federal commission which was appointed to study foot-and-mouth disease in Europe about ten years ago. In 1932, following the death of Dr. J. S. Buckley, Dr. Schoening was made chief of the Pathological Division.

Doctor Hall Goes to National Institute of Health

Dr. Maurice C. Hall (G. W. '16), who has been chief of the Zoölogical Division of the U. S. Bureau of Animal Industry since the death of Dr. B. H. Ransom in 1925, and who served as president of the American Veterinary Medical Association, 1930-31, is leaving the Bureau to become chief of the Division of Zoölogy in the National Institute of Health of the Treasury Department. Dr. Hall takes with him three technical experts who have been associated with him in the Bureau for a number of years: Dr. Eloise B. Cram, Dr. Myrna Jones and Dr. John Bozicevich. Dr. Benjamin Schwarz, who has been assistant chief of the Zoölogical Division, will be acting chief for the time being.

According to *Dog World*, there are about 12,000,000 dogs in the United States, of which 1,200,000 are pedigreed, but only about one-third, or 400,000 are registered.



MINNESOTA STATE VETERINARY MEDICAL SOCIETY

The thirty-ninth annual meeting of the Minnesota State Veterinary Medical Society was held at the Nicollet Hotel, Minneapolis, January 8-9, 1936. The meeting was called to order by President P. H. Riede, who pointed out, in his address, that in talking with the practitioners of the state, they reported an increase of from 40 to over 100 per cent in business over 1934. He further stated that the credit ratings of veterinarians and dentists top the list among the professions. "There is a question I believe the association should consider, and that is the advisability of some definite form of advertising our profession and making the public veterinary conscious," said Dr. Riede.

The Secretary's report showed an increase in membership over the past year. At the present time, there are 242 active and twelve honorary members. The Treasurer's books showed a balance of \$2,598.69.

The committee reports were very good. Dr. C. A. Mack, of Saint Paul, reported for the Committee on Infectious Diseases; Dr. W. H. Feldman, of Rochester, for the Committee on Colleges; Dr. G. S. Failing, of Winona, for the Committee on Medicine; Dr. A. C. Spannaus, of Waconia, for the Committee on Veterinary Practice and Ethics; Dr. E. W. Berg, of Saint Paul, on stallion registration; Dr. W. L. Boyd, of Saint Paul, for the Committee on Surgery; Dr. J. J. Kelly, of Marshall, for the Committee on Auditing; Dr. J. P. Foster, of Minneapolis, for the Committee on Necrology; Dr. Carl Hansen, of Faribault, for the Committee on Milk Inspection; Dr. J. S. Dick, Jr., of Minneapolis, for the Committee on Legislation, and Dr. J. N. Campbell, of Truman, for the Committee on Public Relations.

The afternoon session was entirely taken up with a discussion of a proposed Veterinary Practice Act. This was presented by Mr. K. D. Stallard, attorney for the Society. The proposed new law was mimeographed and placed in the hands of each member

present. Each paragraph was considered separately and suggestions freely made for its improvement. It was unanimously voted that this matter be presented to the Legislature at its coming session.

A banquet was held in the evening, which 200 attended. Dr. H. C. H. Kernkamp presided as toastmaster. Following the entertainment, a discussion on encephalomyelitis of horses was presented by Dr. Edward Records, State Veterinarian and Head of the Department of Veterinary Science, University of Nevada, Reno, Nevada. He was followed by Dr. L. E. Jenkins, of the State Live Stock Sanitary Board; Dr. H. J. Larson, of Fergus Falls; Dr. J. X. Parent, of Foley; Dr. R. Fenstermacher, of University Farm; Dr. J. O. Buck, of Hills; Dr. G. A. Larson, of Breckenridge; Dr. Harry Evenson, of Sacred Heart, and Dr. C. L. Tompkins, of Redwood Falls.

On Thursday morning, the following subjects were presented: "Hog Cholera," by Dr. H. C. H. Kernkamp, University Farm, Saint Paul; "Progress in the Federal Project for Bang's Disease Control," by Dr. A. E. Wight, U. S. Bureau of Animal Industry, Washington, D. C., and "Suggestive Improvement in Farm Sanitation," by Dr. George J. Paul, Melrose, Minn.

The program was resumed Thursday afternoon as follows: "Horse Practice," by Dr. E. R. Frank, Kansas State College, Manhattan, Kans.; "Cattle Practice," by Dr. Herbert Lothe, Waukesha, Wis., and "Interesting Facts Connected with *Diphyllobothrium latum*, the Fish Tapeworm of Man," by Dr. J. E. Thompson, Ely, Minn.

The following officers were elected for 1936-37: President, Dr. R. A. Merrill, Clara City; first vice-president, Dr. A. H. Schmidt, Triumph; second vice-president, Dr. B. A. Pomeroy, Saint Paul; secretary-treasurer, Dr. C. P. Fitch, Saint Paul, and Dr. D. M. McDonald, Minneapolis, who was elected a member of the Board of Trustees for three years.

This was one of the largest meetings which this Society has ever had. There were 200 registered, which indicates that there were at least 225 in attendance.

The Ladies Auxiliary had its first regular meeting at this time. Forty ladies were in attendance and their report indicates that they had a very successful meeting.

C. P. FITCH, *Secretary-Treasurer*.

MAINE VETERINARY MEDICAL ASSOCIATION

The annual meeting of the Maine Veterinary Medical Association was held at the Elmwood Hotel, Waterville, January 8, 1936, with 15 members and three visitors in attendance.

The business part of the program was postponed until after the first speaker had addressed the meeting. He was Professor Webster Chester, of Colby College, and was introduced by Dr. P. R. Baird, of Waterville. Professor Chester's topic was "Heredity," and the manner in which he presented his subject indicated that he had a thorough knowledge of it. He spoke of observations he had made of certain traits and characteristics running through three generations of a family.

In the absence of the President, Dr. L. E. Maddocks, the Vice-President, Dr. J. R. Corliss, presided. The minutes of the October meeting were read and approved. The election of officers resulted as follows: President, Dr. R. E. Libby, Richmond; vice-president, Dr. J. F. Witter, Orono; secretary-treasurer, Dr. S. W. Stiles, Falmouth Foreside; Executive Committee, Drs. C. F. Davis, Rumford Falls; E. E. Russell, Farmington, and C. L. Ryan, Dexter.

It was decided to hold the next meeting at Orono during Farm and Home Week, and a committee consisting of Drs. Witter, Neal and Dendinger were appointed to make arrangements for it.

Dr. J. F. Witter, of the University of Maine, then discussed three recently published veterinary text-books; "Diseases and Parasites of Poultry," by Barger and Card; "Special Veterinary Pathology," by R. A. Runnels, and "Physiology of Domestic Animals," by H. H. Dukes. He urged all Maine veterinarians to join the A. V. M. A. In closing his remarks, he referred to mastitis and told of the work being done at the University of Maine laboratory. Dr. Witter said that the laboratory would run tests of any milk samples sent in by practitioners.

Dr. Knudson read an interesting paper on "Agglutinins and the Result of Heat on the Agglutination Test."

S. W. STILES, *Secretary-Treasurer.*

INTERMOUNTAIN LIVESTOCK SANITARY ASSOCIATION

The ninth annual meeting of the Intermountain Livestock Sanitary Association was held at the Ben Lomond Hotel, Ogden, Utah, January 13-15, 1936. Hon. Harman W. Peery, mayor of Ogden, welcomed the convention to the city. Messrs. Sanders and O'Conner, Ogden city commissioners, also gave addresses of

welcome. Response was made by Dr. J. T. Dallas, of Boise, Idaho. President Swanson gave an address devoted to the present status of the veterinary profession, particularly as it refers to organization and ethics.

Dr. F. G. Miller, of Ogden, gave a rather complete review of the meat inspection service as it is conducted by the U. S. Bureau of Animal Industry. The afternoon session was opened with a discussion of tularemia by Dr. C. B. Philip, U. S. Public Health Service, Hamilton, Mont. The multiplicity of hosts in connection with this disease was emphasized. The organism was found to live as long as 200 days in some transmitting arthropods. Mr. Orange Olsen, of the U. S. Forest Service, gave an interesting discussion of pathological conditions affecting large wild game in the intermountain region.

Dr. L. A. Merillat, of Chicago, gave a classical address on diseases of the skeleton, and advanced possible theories as to the causes of such diseases. Dr. Norman J. Pyle, of Pearl River, N. Y., spoke on canine distemper and methods now recognized as successful in its prevention. Dr. Pyle talked most interestingly on the various skin affections of dogs and suggested methods of treatment which have proved successful. "International and Interstate Professional Relations" was the topic discussed by Dr. Merillat, who made a strong plea for a united front by veterinarians, so that the professional dignity and integrity of our order may be preserved and improved.

Dr. A. B. Clawson, of the U. S. Bureau of Animal Industry, Washington, D. C., gave an illustrated lecture on the more common poisonous plants found in the intermountain region. The results of recent experiments on feeding various poisonous plants were discussed. Dr. Frank Breed, of Lincoln, Neb., discussed bovine mastitis. He stressed the importance of frequent examination of the udder by manipulation as a means of detecting cows which may be spreaders. The strip-cup and hydrogen-ion test were reported to be useful procedures in locating affected cows.

Dr. L. R. Vawter, of Reno, Nev., discussed equine encephalomyelitis. The available knowledge on this disease to date was reviewed. Epidemiology, virus characteristics, and immunity made the talk exceedingly interesting. Dr. Vawter's work suggests that recovered horses have a serum constituent which neutralizes virus and also a cellular, or tissue protectant substance. "A Review of Bang's Disease" was ably presented by Dr. Breed. The methods of control should vary according to

the individual circumstances. Vaccines were believed to have encouraging possibilities as a control measure.

Dr. Hadleigh Marsh, of Bozeman, Mont., demonstrated the whole-blood test for Bang's disease. This method was found to have distinct advantages under range conditions. The method proved as accurate as the laboratory tube test. The susceptibility of various strains of chickens to fowl paralysis was ably discussed by Dr. E. M. Gildow, of Moscow, Idaho. Mortality statistics indicated that the progeny of breeding birds two years old, or older, was much less susceptible to fowl paralysis than the progeny of year-old breeders. Stiff lamb disease was reported on by Dr. A. M. Lee, of Laramie, Wyo. The disease was reproduced in rabbits by inoculating them with organisms isolated from affected sheep.

Dr. Marsh also discussed arthritis in lambs. He stated that clean grounds and tail-docking with hot irons reduce losses from this disease. Proper disinfection of the freshly severed navel cord also was found helpful. Dr. Marsh then reported research studies on mastitis in range sheep. Pasteurella organisms were the most common invaders and clean lambing quarters assisted in control of the disease. Injury to the udder caused by the rough tactics of lambs may be a predisposing cause.

Dr. A. B. Clawson gave one of the outstanding papers of the convention in which he reported, for the first time, the results of recent studies on big-head in sheep. The studies continue to indicate that two species of tetradymia plants are the most probable cause. The action of these plant toxins on the liver and bile secretion was suggested as a possible cause of the edematous swelling so commonly found about the head.

The scientific program was concluded with a comprehensive discussion of swine diseases by Dr. Frank Breed. The differential diagnosis of swine erysipelas, suipestifer infection and hog cholera was discussed. Dr. W. T. Huffman, of Salt Lake City, read a report submitted by the Committee on Parasites.

Thirteen new candidates for membership in the Association were received and voted into membership. Idaho and Wyoming contributed large delegations to the convention.

A very successful banquet was held Tuesday evening, which was well attended by veterinarians and their partners. Dr. C. B. Philip, of Hamilton, Mont., acted as toastmaster. Dr. L. A. Merillat gave the main address of the evening. Following the scientific program Wednesday afternoon, the following officers were elected: President, Dr. E. M. Gildow, Moscow, Idaho; first vice-president, Dr. O. Wennergren, Logan, Utah; second vice-

president, Dr. W. T. Huffman, Salt Lake City, Utah; third vice-president, Dr. A. H. Francis, Denver, Colo.; secretary-treasurer, Dr. D. E. Madsen, Logan, Utah.

D. E. MADSEN, *Secretary-Treasurer.*

VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY

The fifty-second annual meeting of the Veterinary Medical Association of New Jersey was held at the Hotel Hildebrecht, Trenton, January 14-15, 1936. The attendance was good, the total registration being about 125.

The morning session on January 14 was given over largely to association business and the reports of standing committees. Dr. Lester R. Barto, of Summit, spoke on "Veterinary Roentgenology in Vienna and the United States." He also summarized replies to a questionnaire on this subject received from the schools in this country and pointed out the desirability and eventual necessity of developing adequate Roentgen-ray facilities and staffs.

At the afternoon session, three subjects were presented: "Some Problems in Horse Production," by Major Floyd Sager, V. C., Army Remount Depot, Front Royal, Va.; "Tonsilitis in Dogs," by Dr. Donald A. Eastman, Moline, Ill., and "Some Mechanical Factors in Digestion," by Dr. H. H. Dukes, New York State Veterinary College, Cornell University, Ithaca, N. Y.

Major Sager discussed some phases of the horse parasite control and treatment; he also described the horse-breeding program of the Army Remount Service, how suitable stallions are selected and allocated and the work done in examining mares and stallions for breeding fitness. Dr. Eastman described the conditions wherein tonsillectomy may be indicated and give good results in dogs. Dr. Dukes discussed the fundamentals of the mechanics of digestion, principally the various types of peristalsis, and what each type of intestinal movement accomplishes. This talk was well illustrated with motion pictures taken by Dr. Dukes and his associates and also by Dr. Alvarez, of the Mayo Clinic.

An association dinner was held in the evening at which Dr. John B. Hopper, of Ridgewood, served as toastmaster and Dr. Edward Lodholz, of the Graduate School of Medicine, University of Pennsylvania, was the speaker. During the dinner a beautiful gold watch was presented to the Secretary by Dr. C. J. McAnulty, on behalf of the members of the Association.

The morning of January 15 was given to discussions and demonstrations on mastitis. Dr. W. T. Miller, of the U. S.

Bureau of Animal Industry, presented a very comprehensive paper on "Bovine Mastitis," which was discussed by Dr. R. B. Little, of the Rockefeller Institute, Princeton. This presentation was augmented by antemortem and postmortem examinations of the udders of cows with varying degrees of mastitis, the previous histories of which were known and in which milk samples from the individual quarters had been subjected to various laboratory examinations, the results of all these being available.

The demonstration work at the abattoir was capably handled by Dr. Crittenden Ross, veterinary inspector of the New York City Department of Health, and Dr. L. J. Tompkins, of Sheffield Farms Company, New York City.

In the afternoon, a small-animal clinic was conducted, with Dr. J. T. McGrann, of Trenton, in charge. A case of giant-cell osteosarcoma in a Boston terrier was presented and discussed by Drs. McAnulty, Butterworth and Millar. Dr. Eastman performed a cesarean section and a tonsillectomy in the dog. A round-table discussion of fits in dogs, their relation to parasites, diet and cerebral conditions, and their treatment was participated in by many of those present.

The following officers were elected for the ensuing year: President, Dr. E. R. Cushing, Plainfield; first vice-president, Dr. C. J. McAnulty, Atlantic City; second vice-president, Dr. G. H. Kimnach, Hightstown; treasurer, Dr. J. B. Engle, Summit. The present secretary presented his resignation, which was accepted and the selection of his successor was deferred on motion until the summer meeting.

The summer session will be held in Asbury Park.

J. G. HARDENBERGH, *Secretary pro tem.*

STATE VETERINARY MEDICAL ASSOCIATION OF TEXAS

The twenty-sixth annual meeting of the State Veterinary Medical Association of Texas was held in the Driskill Hotel, Austin, January 15-17, 1936, with 102 veterinarians from Texas and from out of the state registered for the meeting. The program was extensive and varied, and the meeting was designated as one at which Texas veterinarians honored their A. V. M. A. President, Dr. J. C. Flynn, of Kansas City.

After the call to order by the President, Dr. J. K. Northway, of Kingsville, an invocation was given by the Rev. Virgil Fisher, of the First Methodist Church of Austin. The veterinarians

were welcomed to the city by Louis N. Goldberg, representing the Chamber of Commerce. The response was given by Dr. H. L. Darby, Inspector-in-Charge, U. S. Bureau of Animal Industry. This was followed by a report of the U. S. Live Stock Sanitary Association meeting held in Chicago, in December, by Dr. R. P. Marsteller, of the A. and M. College of Texas.

How to widen the geographical scope of veterinary practice, possibly with state aid, was a major problem presented before the convention by Dr. T. O. Booth, State Veterinarian, of Fort Worth. President Northway appointed a committee to study this problem and the advisability of seeking state aid. Veterinarians would like to see county veterinary officers established much as county health officers are.

Splendid papers were read by Dr. M. B. Starnes, of Dallas, on "Municipal Meat and Milk Inspection"; by Dr. I. B. Boughton, of Sonora, on "Parasites of Domestic Animals"; by Dr. Hubert Schmidt, of A. and M. College, on "Anaplasmosis of Cattle"; and by Dr. M. E. Maier, of Orange, on "Anthrax Vaccination." The discussions of the papers were led by the chairmen, Drs. Leon G. Cloud, of Laredo, and Dr. M. E. Gleason, of San Antonio, followed by Drs. H. V. Cardona, Fort Worth; J. J. Reid, San Antonio; Col. Geo. H. Koon, Fort Sam Houston; A. C. Burns, Cleburne; Sam Bunton, San Antonio; S. R. Dunn, Corpus Christi, and A. K. Kuttler, Fort Worth.

At the business meeting Thursday morning, the members of the Texas Association, in an endeavor to show their regard for Dr. H. L. Darby, and their appreciation of what he means to the men of Texas, unanimously designated him as Honorary President of the Association. Following this, the regular officers were elected: President, Dr. Chas. W. Neale, San Antonio; first vice-president, Dr. L. I. Lucey, Wichita Falls; second vice-president, Dr. Leon G. Cloud, Laredo; secretary-treasurer, Dr. Dee Pearce, of Leonard.

A discussion of horse diseases and their treatment, with Dr. Jas. K. Northway as chairman in charge, took place with the following participating: Drs. Frank Hecker, Houston; W. C. Butler, Fort Worth; R. P. Marsteller, College Station; R. T. Dickinson, Dallas; G. E. McIntosh, Arlington, and Capt. G. T. Price, Fort Sam Houston. Dr. S. W. Bohls, of Austin, presented "Methods of Preparing Rabies Specimens," demonstrating the subject with slides. Dr. J. C. Flynn, president of the American Veterinary Medical Association, presented "Small-Animal Diseases and Their Treatment." The subject was discussed by the chair-

man, Dr. Fred A. Murray, and the following: Drs. L. E. Casey, Dallas; W. R. McCuistion, Fort Worth; U. E. Marney, San Antonio, and Richard Self, Dallas.

A banquet and dance was held Thursday evening in the Crystal Ballroom of the Driskill Hotel. Entertainment for the members, their wives, and visitors was furnished by Tommy and Shirley Jean McClellan.

The Ladies Auxiliary held their annual meeting at a beautifully appointed luncheon, with Mrs. J. C. Flynn, of Kansas City, as honor guest.

D. PEARCE, *Secretary-Treasurer.*

ARKANSAS AND TENNESSEE VETERINARY MEDICAL ASSOCIATIONS

The twenty-eighth annual meeting of the Tennessee Veterinary Medical Association was held jointly with the Arkansas Veterinary Medical Association in Memphis, Tenn., January 20-21, 1936. Considering the bad weather, the attendance was good.

Dr. J. C. Flynn, of Kansas City, Mo., president of the American Veterinary Medical Association, headed the scientific program with a lecture covering small-animal practice; he also made a radio address in the morning on the importance of having a veterinarian on all municipal health boards.

Dr. A. T. Kinsley, of Kansas City, Mo., made one of the most instructive talks on swine diseases that we have had the pleasure of hearing in a good many years. Other addresses were as follows: Dr. L. J. Kepp, of Atlanta, Ga., "Problems of a Small-Animal Practitioner in a Southern City"; Dr. E. J. Frick, of Kansas State College, "Newer Developments in Bovine Practice"; Dr. T. A. Sigler, of Greencastle, Ind., "Equine Diseases," and Dr. C. E. Salsbery, of Kansas City, Mo., "Encephalomyelitis."

The banquet was held on Monday night, with an attendance of 150 persons. Local arrangements were in charge of Drs. John H. Gillman, L. H. Middaugh, J. C. Young, J. W. Scheibler, Walter Martin and E. B. Mount. A wonderful banquet was served, followed by a floor show, which made even the old men like Doctor Jacob, who presided as toastmaster, take notice. Among the distinguished guests whom he introduced was Dr. J. C. Flynn, who gave a very able address, concluding by asking the whole-hearted support of the entire veterinary profession toward supporting the American Veterinary Medical Association, the greatest organization of veterinarians in the world. The evening was concluded with the annual dance.

A clinic, one of the best we have had in several years, was held on Tuesday. The following officers were elected for the year of 1936: President, Dr. E. B. Mount, Memphis; first vice-president, Dr. A. J. Joyner, Nashville; secretary-treasurer, Dr. A. C. Topmiller (reelected).

A. C. TOPMILLER, *Secretary.*

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY

In order to avoid conflicts with the winter meetings of neighboring state associations, the January meeting of the Veterinary Medical Association of New York City was held on the 22nd, at the Hotel New Yorker. The program for this meeting was arranged as a "grievance program," the idea being to provide an opportunity for every member to express his views on two topics chosen by the Program Committee.

The first topic presented by Dr. C. S. Chase, of Bay Shore, N. Y., was "What Improvements Can Be Made in the Veterinary Medical Association of New York City?" Dr. Chase offered some very helpful and constructive suggestions pertaining to the activities of our own organization. Dr. Sol Shapera, of Mamaroneck, N. Y., opened the discussion of Dr. Chase's paper and then the topic was thrown open for general debate by the members. Many valuable suggestions for the benefit of the Association were obtained through this discussion.

The second topic was "Generally Speaking, What Is Wrong with the Veterinary Profession?" This was presented by Dr. O. E. McKim, of Port Chester, N. Y. This topic covered a wider territory and bore suggestions for the expansion of benefits which could be afforded by the application of the American Veterinary Medical Association to new and needy fields. The discussion was opened by Dr. R. S. MacKellar, Sr., who elaborated pro and con on several points made by the speaker. The subject was then discussed by the members and a committee will be appointed to go further into the matter at a later date.

R. S. MACKELLAR, JR., *Secretary.*

MISSISSIPPI STATE VETERINARY MEDICAL ASSOCIATION

The thirtieth annual meeting of the Mississippi State Veterinary Medical Association was held at Meridian, January 23-24, 1936. Mr. Andrew Gainey, of the Chamber of Commerce of

Meridian, gave the address of welcome in the absence of the Mayor. President D. M. Williams responded to the address.

The first paper on the program was given by Dr. C. E. Salsbury, of Kansas City, Mo. His subject was "Contagious Diseases Prevalent in This Section," but he devoted most of his time to a description of encephalomyelitis. Dr. B. E. Green, of Hattiesburg, led the discussion which followed.

President Williams next introduced Dr. J. C. Flynn, president of the American Veterinary Medical Association. Dr. Flynn's subject was "The Matron and Her Pups." He discussed small animals in general, including breeding, the selection of the sire, raising puppies, bathing, and so forth. Dr. T. A. Sigler, of Greencastle, Ind., spoke on "Large-Animal Practice." This subject was thoroughly discussed and Dr. Sigler gave blackboard drawings and demonstrations to bring out many points in connection with nerve-blocking and local anesthesia.

Dr. Edwin J. Frick, of Kansas State College, presented "Small-Animal Suggestions" and "New Developments in Veterinary Medicine." He said that veterinarians did not make proper use of enemas, parasitic work, intravenous medication, nembutal, and various other new developments. Following Dr. Frick's paper, there was an instructive round-table discussion led by Drs. Frick and Sigler.

The banquet was held the evening of January 23. Dr. E. S. Brashier introduced Dr. Sigler, who was toastmaster for the evening. Dr. Flynn gave an interesting talk on the American Veterinary Medical Association and its activities. He encouraged every member of our association to join. Dr. Sigler called on many of those present for short talks, including the officers of the State Association, and the two ladies present, Mrs. J. C. Flynn and Mrs. B. M. Leigh.

Just after the banquet, the business meeting was called to order by the President. The election of officers resulted as follows: President, Dr. Andy Crawford, Rolling Fork; vice-president, Dr. Nathan Bradshaw; secretary-treasurer, Dr. E. H. Durr, Jackson.

Following the election of officers, invitations for the next meeting were presented from State College, Jackson and Tupelo. The latter was selected as the next meeting place. Dr. R. H. Stewart, of Jackson, and Dr. J. V. Duckworth, of Picayune, were selected as delegate and alternate, respectively, to the House of Representatives of the American Veterinary Medical Association.

Drs. Charles Barnes, B. M. Leigh and L. L. Powell were presented as new members of the Association.

The Secretary was asked to write the Mississippi Live Stock Sanitary Board asking that the veterinarians of Mississippi be given the preference, wherever it is possible, for employment in connection with tuberculosis eradication and Bang's disease control work. A similar letter was ordered written to the United States Bureau of Animal Industry.

A motion was presented by Dr. O. M. Norton, of Greenville, to approve a veterinary short course at State College and ask the coöperation of the governor of Mississippi and the president of the College to assist the Association in obtaining from the Legislature an appropriation of \$2,000 to be used for paying the expenses of veterinarians who would be asked to conduct the short course.

On the morning of the second day, Dr. Charles B. Cain, of State College, gave a splendid address on the new veterinary hospital building. Following this, Dr. Jos. T. Alston, of Tupelo, gave a talk on "Acetomemia." There was much discussion on this subject. Dr. Eugene B. Ingmand, of Zionville, Ind., gave a paper on "The Present Status of Biological Therapy in Veterinary Medicine." Dr. Ingmand's talk was brief, but interesting to the last word. Dr. Hartwell Robbins discussed "Progress of Tuberculosis Eradication and Testing for Bang's Disease." This proved to be very interesting for everyone present. The last speaker on the program was Hon. J. C. Holton, his subject being "A Balance of Industry and Agriculture."

E. H. DURR, *Secretary-Treasurer.*

COLORADO VETERINARY MEDICAL ASSOCIATION

The thirty-second annual meeting of the Colorado Veterinary Medical Association was held at the Albany Hotel, Denver, January 23, 1936. Forty-five veterinarians, several students from the Veterinary Division of the Colorado State College and two visitors from out of the state attended. At the morning session, Dr. E. N. Stout, of Fort Collins, gave a report on the Oklahoma City meeting of the American Veterinary Medical Association. Dr. A. N. Carroll, of Pueblo, conducted a discussion on "Canine Skin Diseases" and Dr. H. G. Weigand, of Englewood, gave a paper on "Diseases of the Canine Uterus." Luncheon was served at the Albany Hotel and Dr. Geo. H. Glover, of Fort Collins, and Dr. J. H. Bouton, of Aurora, furnished the entertainment.

The afternoon session was opened with an address on "The Federal Program for Controlling Bang's Disease," by Dr. A. H.

Francis, of Denver, followed by "Equine Encephalomyelitis in Colorado During 1935," given by Dr. I. E. Newsom, of Fort Collins. Dr. James Farquharson, of Fort Collins, discussed the symptoms of equine encephalomyelitis in connection with some motion pictures of cases of the disease. Dr. R. M. Gow, of Denver, chose as his topic, "Interstate Regulations Pertaining to Live Stock."

Dr. I. E. Newsom and Dr. E. N. Stout were elected for the next two years as delegate and alternate, respectively, to the A. V. M. A. House of Representatives. Veterinarians joining the Association were: Dr. A. H. Francis, Denver; Dr. Rex E. Tinsman, Julesburg, and Dr. E. B. Orme, Norwood.

The following officers were elected: President, Dr. C. J. Hayden, Arvada; first vice-president, Dr. T. H. Brady, La Junta; second vice-president, Dr. R. F. Bourne, Fort Collins; secretary-treasurer, Dr. B. R. McCrory, Fort Collins. Dr. E. N. Stout, Fort Collins, and Dr. Geo. H. Carr, Brighton, were chosen as members of the Board.

B. R. MCCRORY, *Secretary-Treasurer.*

NEVADA STATE VETERINARY ASSOCIATION

The annual meeting of the Nevada State Veterinary Association was held in the Agricultural Building, University of Nevada, Reno, January 31, 1936.

The following papers were presented:

"Statistical Report of Bang's Disease Eradication in Nevada Under the Federal Plan," by Dr. R. A. Given, Reno.

"Equine Encephalomyelitis," by Dr. L. R. Vawter, Reno.

"Municipal Milk Inspection in Reno," by Dr. H. A. Reagor, Reno.

"City Meat Inspection," by Dr. W. H. Hilts, Reno.

"Collection of Material for Laboratory Examination," by Dr. Edward Records, Reno.

"Highlights of U. S. Live Stock Sanitary Association Meeting," by Dr. Warren B. Earl, Reno.

The evening program was held at Hotel El Cortez and was preceded by the annual dinner which was served at six o'clock. Following the presentation of the last paper on the program, federal and state veterinarians reported on interesting cases and incidents met in their work. A short business session followed and these officers were elected: President, Dr. F. H. Baker, Gardnerville; vice president, W. K. Shidler, Reno; secretary-treasurer, Dr. Warren B. Earl, Reno.

WARREN B. EARL, *Secretary-Treasurer.*

HOUSTON VETERINARY ASSOCIATION

The regular meeting and luncheon of the Houston Veterinary Association was held at the Macatee Hotel, Houston, Tex., February 6, 1936, with 14 active members present. This meeting rounded out the second year of the Association, with an average attendance of 79 per cent of the active membership, which consists of 22 active and eight honorary members.

Drs. J. G. Horning and Frank Hecker, both of Houston, gave very interesting reports of the recent meeting of the State Veterinary Medical Association of Texas. Dr. Hecker also read a paper, "Equine Influenza," a subject which had been assigned to him. This paper was very instructive and was well received by those present. Dr. W. M. Smotherman, of Huntsville, gave a case report on heart worms in dogs in the State Prison Systems pack of hounds.

A special meeting in honor of Dr. J. C. Flynn, president of the American Veterinary Medical Association, was held on January 17, 1936. At this meeting Dr. Flynn was notified of his election as an honorary member of the Association. Dr. Flynn gave an interesting talk, after which he expressed his pride in our organization, and stated that he had heard of the activities of the Houston Veterinary Association from Kansas, on down through Oklahoma and Texas.

B. A. TAYLOR, *Secretary.*

VETERINARY ASSOCIATION OF MANITOBA

The annual meeting of the Veterinary Association of Manitoba was held at the Alexandra Hotel, Winnipeg, February 6, 1936. There was a good attendance of members from all parts of the province.

Dr. A. L. Alton, of Portage la Prairie, president of the Association, opened the meeting with the business session. In his address he referred to the amount of quackery on the part of unqualified men in various parts of the province, and suggested that an effort be made to obtain greater assistance from the Attorney General's Department in conducting prosecutions against parties practicing illegally.

The report of the Secretary-Treasurer showed the Association to be in a sound financial condition, with a balance of \$450.83 on hand at the end of the past year. The annual membership dues were again set at four dollars. A motion was passed endorsing

the action of the Executive Council in connection with complaints received of unethical advertising and publicity in the press by a member.

The standing committee to interview the Provincial Government was instructed to take up the question raised at a meeting of the Western Live Stock Breeders Association, as to whether the live stock situation in western Canada did not warrant assistance to the veterinary profession on the part of federal, provincial, and municipal governments.

Members of the Council for the ensuing year were chosen as follows: Dr. F. M. Coombs, Hamiota; Dr. J. A. Martin, Sperling; Dr. Wm. Hilton, Winnipeg; Dr. J. R. Fisher, Winnipeg; Dr. A. Savage, Winnipeg; Dr. J. W. Fasken, Portage la Prairie, and Dr. T. G. Sprague, Winnipeg. The Council elected their officers as follows: President, Dr. J. A. Martin, Sperling; vice-president, Dr. J. W. Fasken, Portage la Prairie; secretary-treasurer and registrar, Dr. Wm. Hilton, Winnipeg. Drs. Savage, Fisher and Hilton comprise the Board of Examiners. Drs. H. J. Tingley and A. M. McFarlane, both of Winnipeg, were appointed auditors.

During the afternoon session the following addresses and papers were presented:

"Diagnostic Laboratory Service Established in the Old University Building by the Provincial Government," by Dr. J. K. Morrow, Winnipeg.

"The Present Status of the Veterinarian, Financial and Otherwise," by Dr. H. N. Thompson, Virden.

"Veterinary Science," by Dr. A. Savage, University of Manitoba, Winnipeg.

"The Principles of Scientific Breeding and Their Application to Captive Fur-Bearing Animals" (Illustrated), by Dr. J. A. Allen, Winnipeg.

"Parturient Paresis," by Dr. J. A. Martin, Sperling.

"Milk Inspection," by Dr. E. J. Rigby, Provincial Board of Health, Winnipeg.

These papers and addresses were productive of interesting discussions contributing to a very instructive session, which was greatly appreciated by the members present.

WM. HILTON, *Secretary-Treasurer.*

CONNECTICUT VETERINARY MEDICAL ASSOCIATION

The annual meeting of the Connecticut Veterinary Medical Association was held at the Hotel Bond, Hartford, February 5, 1936.

The following officers were elected for the ensuing year: President, Dr. F. J. Brockett, Suffield; first vice-president, Dr. E. R.

Dimock, Merrow; second vice-president, Dr. Edwin Laitinen, West Hartford; secretary-treasurer, Dr. Geo. E. Corwin, Hartford. Dr. A. T. Gilyard, Waterbury; Dr. M. Ray Powers, Norwalk; Dr. E. M. Bitgood, Middletown; Dr. I. R. Vail, Bristol, and Dr. Geo. T. Crowley, New Britain, were chosen as the Board of Censors.

Following the business meeting, a banquet was held and the Association had the unusual honor of having with them Hon. Wilbur L. Cross, Governor of the State, and Hon. Joseph M. Tone, Commissioner of Labor.

GEO. E. CORWIN, *Secretary-Treasurer.*

ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION

The fifty-fourth annual meeting of the Illinois State Veterinary Medical Association was held in the Palmer House, Chicago, February 5-7, 1936. The attendance was somewhat below average, due to the extremely cold weather and the almost impassable condition of the highways leading to Chicago.

Besides the President's address, reports of the various committees and the business session, an instructive and well-received program was rendered during the first two days, followed by an outstanding small-animal clinic held at the Palmer House the last day.

An interesting feature of the business session was a heated discussion on a proposed amendment to the By-laws that had for its purpose the reduction of the annual dues from five dollars to three dollars. When the ballots were counted, it was found that 53 had voted for the proposed change and 33 against it. Since it did not receive the necessary two-thirds of the votes cast, as required by the Constitution, the president declared the proposition lost.

The first day, Dr. H. C. Rinehart, Chief Veterinarian, Illinois State Department of Agriculture, gave a practical discussion on conducting a general practice. He stressed the necessity of being familiar with the idiosyncrasies and peculiarities of the different species of animals. He particularly advised against the use of emasculatome pinchers in castrating calves.

Dr. C. A. Henley, of New Berlin, gave a résumé of the Federal-State Bang's disease program at the Springfield laboratory, which brought out considerable discussion. It was stated that a suspi-

cious reacting bull was often a dangerous animal in the herd, more so than the degree of reaction would indicate.

The afternoon session was opened with a scholarly address and lantern-slide lecture on "Mastitis" by Dr. Ward Giltner, Michigan State College. This was followed by a highly instructive paper by Dr. E. C. Khuen, of Evanston, on "How the Laboratory Can Help the Practitioner in Diagnosis."

"Encephalomyelitis of Horses" was ably presented by Dr. C. E. Salsbery, Kansas City, Mo., who called attention to the fact that all brain diseases of horses clinically resembling encephalomyelitis are not necessarily caused by a filtrable virus. Dr. J. V. Lacroix, of Evanston, conducted a symposium on skin diseases that brought forth considerable discussion.

On February 6, Dr. Herbert Lothe, Waukesha, Wis., read a well-prepared paper on "The Prevention and Treatment of Sterility in Cattle," which was discussed by Dr. Harry Caldwell, of Wheaton.

Dr. Gilbert Fitz-Patrick, Chicago, chairman of the Illinois Cancer Committee, discussed cancer, illustrated with lantern-slides and the famous Canti moving picture depicting normal and cancer cells in their numerous mitotic activities, magnified 72,000 times. This was a very interesting and educational presentation that also touched upon the field of eugenics and genetics.

A masterly discussion on "A Study of Starch Digestion in the Dog" was given by Dr. A. C. Ivy, Professor of Physiology and Pharmacology, Northwestern University Medical School, Chicago. Following this Dr. S. W. Haigler, Saint Louis, Mo., read a well-received paper on "Infectious Conditions of the Gastro-Intestinal Tract of Dogs."

At the afternoon session, Dr. L. M. Darst, Princeton, presented a splendid address on "Nutritional Diseases as Seen in Practice." This was followed by a very interesting and instructive lantern-slide lecture on "The Udder of the Cow as a Focus for the Dissemination of Human Disease," by Dean D. J. Davis, University of Illinois, College of Medicine, Chicago. "Anesthesia" was ably presented by Dr. E. E. Sweebe, of North Chicago.

Dr. Fred Eagle acted as toastmaster at the dinner session. Dr. Ward Giltner again addressed the meeting. Following this, Mr. Al Priddy, an internationally known authority on animals, gave a most interesting lecture on "Can Animals Think?"

On February 7, a very high class and educational small-animal clinic was held in the Palmer House under the able direction of Dr. J. V. Lacroix, assisted by several other prominent small-animal practitioners.

Officers elected for the year 1936 are: President, Dr. J. R. Brown, Ottawa; vice-president, Dr. G. W. Jensen, Antioch; secretary-treasurer, C. C. Hastings (re-elected), and member of the Executive Board, Dr. F. C. Jones, Macomb.

C. C. HASTINGS, *Secretary.*

NORTH CAROLINA STATE VETERINARY MEDICAL ASSOCIATION

A special business meeting of the North Carolina State Veterinary Medical Association was held in Raleigh, February 21, 1936, with 27 veterinarians present. Dr. W. A. Carter, of Weldon, president of the Association, presided. A proposed amendment to the Constitution, raising the annual dues from \$3.00 to \$10.00 was discussed. This matter will be decided at the annual meeting to be held at Goldsboro, July 7-8, 1936.

A committee was appointed to confer with State College officials at Raleigh, looking forward to the advisability of holding a veterinary conference at the College next winter. The coming annual meeting at Goldsboro came up for discussion and plans were laid. The North Carolina Rabies Law was discussed. Much dissatisfaction exists with the present law which gives the State Department of Agriculture the supreme authority in the matter. It has been suggested that county health departments should have control.

J. H. BROWN, *Secretary.*

Arkansas-Oklahoma Meeting

Another joint meeting of two state associations is announced. The members of the Arkansas and Oklahoma Veterinary Medical associations will get together at the Mountain Inn Hotel, Fayetteville, Ark., June 15-16, 1936, for their summer meeting. The winter meeting of the Arkansas Association was held in Memphis, as a joint meeting with the Tennessee Association. Evidently the Arkansas veterinarians find their joint meetings enjoyable and profitable.

San Juan Capistrano (California) "mission swallows" have started their annual flight southward each year on October 23, for the last 68 years.

NECROLOGY



FRANK ABIRAM RICH

Dr. Frank A. Rich, of Burlington, Vt., died at his home, September 25, 1935. He had been in poor health for several years, but his passing was sudden and unexpected. The cause of death was pulmonary hemorrhage and chronic bronchiectasis.

Born at Avon, N. Y., August 2, 1861, Dr. Rich attended the Ontario Veterinary College. Following his graduation in 1889, he located in Burlington. In 1891, he was appointed instructor in veterinary science at the University of Vermont. He held the rank of professor from 1901 until his death and was one of the oldest members on the faculty. In 1893, Dr. Rich received his M. D. from the Medical College of the University of Vermont. He was one of the pioneers in the use of the tuberculin test in the United States and was the author of a bulletin on bovine tuberculosis, published by the Vermont Agricultural Experiment Station in 1894.

In 1913, Dr. Rich created quite a stir in veterinary circles by publishing Bulletin 174 from the Vermont Station, reporting the use of methylene blue as a remedy for infectious abortion. Ten years later, in another bulletin, Dr. Rich freely admitted that the previous bulletin undoubtedly had been published prematurely.

Regardless of any intrinsic merits which methylene blue may have had, there were two factors which interfered with its use. The outbreak of the World War in 1914 sent the price of medicinal methylene blue skyrocketing from \$2.50 to \$80.00 per pound and its use became prohibitive at that price. Then, the administration of methylene blue to cows resulted in making things look rather blue around the dairy barn. This served to advertise the presence of the disease and buyers were immediately put on their guard.

Dr. Rich joined the A. V. M. A. in 1902. He was a member of the Vermont Veterinary Medical Association, the Vermont State Medical Society and the Chittenden County Clinical Society. He was a member of Washington Lodge No. 3, F. & A. M., Burlington Chapter, No. 3, R. A. M., the Ethan Allen Club, and an honorary member of Phi Chi Fraternity. He is survived by his widow

(née Anna Varney), two daughters, four sons, and one brother, Dr. T. S. Rich (Ont. '91), of Lansing, Mich.

HENRY O. WOLTERS

Dr. Henry O. Wolters, of Scarsdale, N. Y., died suddenly October 7, 1935.

Born in New York City, March 4, 1872, Dr. Wolters was educated in the public schools, New York University and the American Veterinary College. He received his degree from the latter institution in 1894. His first appointment was with the Fourth Avenue Car Line, as assistant veterinarian. On September 3, 1896, he was appointed to a position with the Department of Street Cleaning. Later he was made Chief Veterinarian and inspected all horses bought by the Department for many years. He also bought and cared for the horses of several large breweries and coal companies in New York City.

On January 1, 1929, Dr. Wolters retired and located in Scarsdale, N. Y., where he conducted a small-animal practice. For several years he was a judge at the Atlantic and Empire Cat shows. He was a member of the Liederkranz Club, Excelsior Lodge of Masons, Jerusalem Chapter, Rotary Club, Town Club, and Scarsdale Choral and Greenacres Association. He is survived by his widow, a brother and a sister.

R. S. M.

JOHN DUDLEY MOORE

Dr. John D. Moore, of Tientsin, China, died November 27, 1935, at the age of 45.

A native of Albion, N. Y., and a graduate of the New York State Veterinary College at Cornell University, class of 1916, Dr. Moore was commissioned as a second lieutenant in the Veterinary Corps of the Army during the World War, and was stationed successively at Camps Upton, Dix, Taylor and Greenleaf. Later he was assigned to duty at West Point. He was discharged from his temporary commission and given a commission as second lieutenant in the Regular Army, August 20, 1919, and was assigned to the Orient. After a short stay in the Army service, he resigned and entered the consular service. He served as an inspector of animals for the Port of Tientsin, where he had resided for the past 17 years. He was a member of Beta Chapter, Alpha Psi Fraternity.

CHARLES R. JOLLY

Dr. Charles R. Jolly, of Atlanta, Ga., died at his home, December 14, 1935. He was a native of Pennsylvania and a graduate of the University of Pennsylvania. He finished the work for his veterinary degree in 1890, when he was only 20 years old, and had to return the following year to receive his diploma with the class of 1891. The following tribute was paid Dr. Jolly by a friend who knew him well:

Dr. Jolly was advised to locate in the South, but the slogan, "Go west, young man," was still echoing in the land. After arriving in Georgia, he traveled to California to observe prospective fields in many states. He never regretted his final decision to locate in Atlanta, where he continued to uphold the standards of modesty, honesty and fair dealing in his profession. He never complained of arduous hours, night calls or work unpaid for by poor men needing his services. He was particularly skilled in handling "green" horses, and much of his success in diagnosing and treating diseases was due to long hours of personal observation of individual cases. Dr. Jolly chose to abandon small-animal practice and specialized in horses and mules, in which branch he became a recognized authority in the southeastern states.

Atlanta was the second largest mule market in the world, horses being used in all departments of public works, as well as by express and ice companies and all delivery agencies. This made active business for the veterinarian aspiring to lift the profession above the loudly dressed, uneducated and publicly exaggerated type of man.

The march of time carried Dr. Jolly through the so-called "gay nineties," when horse shows, tally-ho parties, sportsmen with dashing spans, turn-outs of smart young physicians driving alternates for morning and afternoon calls, liveried coachmen in command of stately landaus, and even undertakers with ornate hearses and long lines of shining equipment creeping along—all vied with each other in the display of magnificent horsemanship! At one time Dr. Jolly maintained a farm especially equipped for Thoroughbreds taking a vacation while their owners were abroad.

Horses were to the young and old contingent of society in those days even more than automobiles are today. The element of individuality of the animals is now lacking; and prosaic filling stations on every corner have abolished the incentive to gather in some popular veterinarian's office adjacent to his infirmary and indulge in "horse talk" as well as discussion of politics and other current topics.

Small wonder that Dr. Jolly became a close student of human nature. His brevity of words, original expressions and droll humor were well known. He abhorred sham of every kind, was tolerant of the weaknesses of others and never advertised his deeds of charity. His word once given was never retracted, and his business, social and family life made him beloved by all who knew him intimately.

Dr. Jolly was the first veterinarian to establish a modern animal hospital in Atlanta, located on Exchange Place, the present site of the Atlanta Theatre. Later he moved to Courtland Street Viaduct, in a concrete structure built for fire protection and which accommodated infirmary, livery stable and an expert shoeing establish-

ment. He was a member of the Governor's Horse Guards and acted as one of the judges in horse shows.

True to his character of standing by his decisions, Dr. Jolly, while recognizing new opportunities for veterinarians in the field of research, animal husbandry, cattle breeding and treating small animals, retired from active practice in 1923 and became affiliated with eight railroads through the Southern Weighing and Inspection Bureau of Atlanta, governing live stock shipments. He rendered his opinions on the merits of each case, maintaining impartiality to railroad and shipper alike.

Dr. Jolly held this position until his death and was at his post of duty within three days of his passing away. He went as he would have chosen—quietly, inconspicuously—with assurance of immortality and supreme faith in a God of love and justice.

Truly this man has been an inspiration to his colleagues and a credit to his profession!

Dr. Jolly joined the A. V. M. A. in 1908. He served as a member of the Committee on Finance, 1913-15.

WILLIAM C. TRAVIS

Dr. Wm. C. Travis, of Kuttawa, Ky., died December 25, 1935, at the Veterans' Hospital, at Outwood, Ky., where he had been a patient for four days. Pneumonia was the cause of death.

Born in Birmingham, Ala., Dr. Travis was a graduate of the Terre Haute Veterinary College, class of 1918. He was a veteran of the World War and had been located at Kuttawa for the past 17 years. He is survived by his widow, five children, one brother and three sisters.

HENRY J. HANCOCK

Dr. Henry J. Hancock, of Portland, Ore., died at his home, December 29, 1935. He had been in poor health for several years.

Born in England, July 27, 1851, Dr. Hancock received his veterinary education at the Royal College of Veterinary Surgeons, London. His diploma was dated April 16, 1872. He also pursued a two-year course in physical science at London University. From 1874 to 1888, he served as a veterinary inspector in the Agricultural Department of Great Britain. Shortly thereafter he came to the United States and became a citizen of this country on August 19, 1895.

Dr. Hancock practiced for a short time at Canfield, Ohio. On April 8, 1898, he entered the service of the U. S. Bureau of Animal Industry and was assigned to meat inspection at Hammond, Ind. From June 16, 1900, until December 15, 1900, he was out of the service. On the latter date he was reinstated and stationed at South Omaha, Neb. He was later transferred to

Salt Lake City, and in 1906 to Portland, Ore. He retired from the service on July 26, 1921.

E. E. C.

BASAL C. PARKER

Dr. Basal C. Parker, of Afognak, Alaska, lost his life by drowning January 4, 1936.

Born June 26, 1893, at Carlisle, Iowa, Dr. Parker finished high school before entering the Kansas City Veterinary College. Following his graduation in 1918, he spent four months at Camp Greenleaf. In 1919, he accepted an appointment as territorial veterinarian of Alaska and was stationed at Kodiak. He resigned about two years later and returned to Kansas City, Mo., where he made preparations for establishing a fox ranch on Whale Island, Alaska. This enterprise proved to be highly successful. From a start of 20 pairs of blue foxes, the ranch breeding stock grew to 200 pairs.

Dr. Parker joined the A. V. M. A. in 1919 and served as resident territorial secretary for Alaska from 1922 until 1929. He is survived by his widow (née Madge Woodward) and his parents.

A. T. K.

F. HOWARD MATSON

Dr. F. Howard Matson, of Newell, Iowa, died at the home of his parents in Alta, Iowa, from a heart attack, January 15, 1936.

Born in Alta, Iowa, August 20, 1906, Dr. Matson received his preliminary education in the local schools and studied veterinary medicine at Iowa State College. Following his graduation in 1930, he was associated with Dr. W. F. Miller (McK. '06), of Storm Lake, Iowa. Later, he located in Newell, where he was practicing at the time of his death.

C. D. L.

MARION ALEXANDER PURDY

Dr. M. A. Purdy died at his home near Simpsonville, Ky., January 18, 1936, at the age of 80 years.

A native of Warren County, Ind., Dr. Purdy was a graduate of the Chicago Veterinary College, class of 1909. Until about ten years ago he practiced in Shelbyville, Ky. He numbered among his clients many of the prominent horsemen of Kentucky. For many years he was an assistant state veterinarian. He also

was a veterinary inspector at the Bourbon Stock Yards, Louisville, and at Eminence, Ky.

Dr. Purdy joined the A. V. M. A. in 1912. He was a member of the Kentucky Veterinary Medical Association and had served as vice-president. He is survived by his widow (née Myra Trifler).

E. C.

GERALD RODERICK DOWD

Dr. Gerald R. Dowd, of Saranac Lake, N. Y., died February 6, 1936, after a protracted illness.

Born in San Francisco, Calif., May 4, 1897, Dr. Dowd attended public schools and then decided to study veterinary medicine at Kansas State College. He was graduated in 1925, and in the fall of 1927, he registered at Cornell University for graduate work in the New York State Veterinary College. He majored under Dr. W. A. Hagan and received his M. S. in 1928. His thesis was on the evolution of the tubercle in animals. The following year he continued his work for a Ph. D. In the spring of 1929, Dr. L. U. Gardner, of Saranac, needed an assistant and Dr. Hagan recommended Dr. Dowd to him.

About a year after going to Saranac, Dr. Dowd broke down and had to go to bed, as a result of overtaxing himself. For several years he was up and down, but about a year ago he went to bed to stay. At about that time, Drs. Hagan, Olafson and Birch went to Saranac and gave Dr. Dowd his final examination for his Ph. D. degree. This would have been granted him had he been able to complete his thesis, the material for which he had gathered but had not been able to put in shape.

Dean Dykstra, of Kansas State College, reports that Dr. Dowd, as the last evidence of his good will for his alma mater, left his extensive private library to the Division of Veterinary Medicine.

W. A. H.

E. B. McCLURE

Dr. E. B. McClure, of Davenport, Iowa, died in a local hospital, February 12, 1936, of pneumonia. He was born in Harrisonville, Ohio, August 24, 1880. Following his graduation from the McKillip Veterinary College in 1911, he practiced at Morrison and Ashton, Ill., going to Davenport in 1930. He is survived by

his widow (née Alice Holliday), two sons, two daughters, a sister and two brothers.

F. J. N.

JOSEPH B. CLANCY

Dr. J. B. Clancy, of Prospect Park, Ill., died in an ambulance enroute to a hospital in East Saint Louis, February 21, 1936. He had been a sufferer from diabetes for the last five years and when his condition became serious it was decided to remove him to a hospital. He was 69 years of age.

Born in Lowell, Mass., Dr. Clancy was a graduate of the Chicago Veterinary College, class of 1892. He entered the service of the U. S. Bureau of Animal Industry in 1893 and was assigned to meat inspection at Chicago. In 1902 he was transferred to East Saint Louis, Ill., and in 1911 to Jacksonville, Ill., where he remained for several years. He then was transferred back to East Saint Louis, where he was in charge of meat inspection until 1928, when he was retired from active service.

Dr. Clancy was a member of the A. V. M. A. from 1903 to 1929. He was secretary of the Chicago Veterinary Association, 1898-99. He is survived by his widow, two daughters and one son.

G. H. B.

CHARLES M. WRIGHT

Dr. C. M. Wright, of Carthage, Mo., died February 22, 1936, at the home of a brother near Carthage. He had been seriously ill for about four days. On October 25, 1935, he was badly gored by a bull and had not completely recovered from the injuries received at that time.

Born near Woodsfield, Ohio, January 18, 1882, Dr. Wright received his veterinary education at Ohio State University. Following his graduation in 1908, he located at Carthage, Mo. Two years later, he entered the service of the U. S. Bureau of Animal Industry and was assigned to meat inspection, at Chicago, and later to tick eradication work in North Carolina. In 1912, he returned to Carthage and, for a time, practiced with Dr. W. J. Houser. Since 1923, he had made his home with his brother, Ellis Wright, and was associated with him in raising purebred Jerseys. He was formerly a director of the Missouri Jersey Cattle Club.

Dr. Wright was a charter member of Alpha Psi Fraternity. He is survived by his parents, one brother, one sister, one step-sister and a half brother.

FRANK J. FESS

Dr. Frank J. Fess died at his home in Ferndale, Mich., February 26, 1936, following a heart attack. He had suffered from a number of similar attacks shortly prior to his death.

Born at Grand Haven, Mich., August 20, 1873, Dr. Fess was educated in the local schools before entering the Chicago Veterinary College. Following his graduation in 1905, he entered the service of the U. S. Bureau of Animal Industry and was assigned to meat inspection in Chicago. Later he was transferred to Detroit, where he remained until 1921, when he resigned from the service to enter the iron specialty manufacturing business. Later he purchased a drug store in Detroit and was operating it at the time of his death.

Dr. Fess joined the A. V. M. A. in 1918. He is survived by his widow (née Rachel Burtis), his mother, one son, one daughter and two sisters.

FRANK J. McNEAL

Dr. Frank J. McNeal, of Wilkes-Barre, Pa., died suddenly at his home, February 29, 1936, at the age of 62. Heart trouble was the cause of death.

Born in Shickshinny, Pa., February 20, 1874, Dr. McNeal was educated in the schools of the community. He was graduated from the Ontario Veterinary College in 1895 and immediately entered practice in Wilkes-Barre, where he built up a large practice and gained a host of friends. He always was a very ethical practitioner and was a faithful attendant at meetings of veterinary associations to which he belonged, thereby setting a splendid example for the younger members of the profession. Dr. McNeal was one of the real horsemen of the Wyoming Valley and thoroughly enjoyed riding his splendid saddle horse, something that he did almost daily during recent years.

Dr. McNeal joined the A. V. M. A. in 1917. He was a member of the Pennsylvania State Veterinary Medical Association and had served as a vice-president and trustee. He was a member of the Northeastern Pennsylvania Veterinary Medical Association, Sylvania Lodge 354, F. and A. M., Dieu le Veut Commander and the Irem Temple. He is survived by his widow and one brother, Dr. P. N. McNeal (Ont. '96), of Montrose, Pa.

E. W. H.

HENRY NIGHTINGALE LAWRENCE

Dr. Henry N. Lawrence, of Gainesville, Fla., died at the Alachua County Hospital, Gainesville, February 29, 1936, after an illness of four weeks. Pneumonia was the cause of death.

For the past eight years, Dr. Lawrence had been city milk and meat inspector, in addition to conducting a private practice. He was a graduate of the University of Pennsylvania, class of 1916, and had been located in Mobile, Ala., before going to Gainesville. During the World War he was commissioned as a lieutenant in the Veterinary Corps and saw service overseas with the A. E. F. He was a member of Alpha Psi Fraternity.

M. W. E.

HARRY BARTLE MITCHELL

Dr. Harry B. Mitchell, of Lancaster, Pa., died at the Lancaster General Hospital, March 6, 1936, after an illness of only two weeks. He had suffered a general physical breakdown, which was aggravated by a heart complication.

Born in Wellsboro, Pa., September 21, 1885, Dr. Mitchell attended local schools, then entered the State Normal School at Mansfield, Pa., and was graduated in 1906. After teaching for three years, he decided to study veterinary medicine and entered the University of Pennsylvania. He was graduated in 1912 and, after practicing at New Cumberland, Pa., for a year, entered the employ of the Pennsylvania Bureau of Animal Industry. He was assigned to inspection work at the Lancaster stock yards. Later he was transferred to the same work at Pittsburgh.

In 1925, Dr. Mitchell returned to Lancaster to accept the newly created position of municipal milk inspector. Recently, when the City of Lancaster adopted an ordinance regulating the slaughtering of cattle and the sale of meat, he became the chief meat inspector. Dr. Mitchell's ability in this field was recognized not only locally, but throughout the county and state, and his diplomacy in handling difficult situations won for him a very high reputation as a public official.

Dr. Mitchell joined the A. V. M. A. in 1913. He was a member of the Pennsylvania State Veterinary Medical Association, the Twelfth International Veterinary Congress, Omega Tau Sigma Fraternity, Wellsboro Lodge, F. and A. M., Pittsburgh Consistory and Shrine, and Lancaster Tall Cedars. He is survived by his widow (née Sara Kauffman), his father and three sisters.

H. W. B.

EMIL EMANUEL WELLER

Dr. Emil E. Weller died at his home in Brooklyn, N. Y., March 8, 1936, from diabetes mellitus.

Born in New York, N. Y., July 27, 1888, he attended grammar and high schools there. He was graduated from the United States College of Veterinary Surgeons, Washington, D. C., in 1912. He entered the World War from Texas as a lieutenant and went overseas, where he served until the armistice, being gassed and wounded in the Argonne. After his discharge, he was with Armour and Company, as inspector of meats. In 1926, when the Joint Inspection Service of Live Poultry was inaugurated, he was licensed by the Secretary of Agriculture as live poultry inspector and later as dressed poultry inspector, serving in a number of canneries in New York.

Dr. Weller joined the A. V. M. A. in 1929. He was a member of the Christian Science Church where he was a reader. He was also a member of Elbe Lodge No. 893 F. and A. M., New York, the Consistory and Alzabar Temple of San Antonio, Texas. Surviving are his widow, mother, two daughters and a brother.

L. D. I.

WILLIAM H. WILKINSON

Dr. William H. Wilkinson, of Holly, Mich., died at his home, March 10, 1936, after an illness of two years, due to a heart ailment.

Born at Almont, Mich., July 30, 1864, Dr. Wilkinson was a graduate of the Ontario Veterinary College, class of 1894. He practiced first at Almont, going to Holly in 1904. He was a member of the Michigan State Veterinary Medical and Southeastern Michigan Veterinary Medical associations. He is survived by his widow (*née* Olive Pine), three daughters, a son, two brothers and a sister.

GEORGE H. LAPE

Dr. George H. Lape, of Adrian, Mich., died at the Emma L. Bixby Hospital, March 15, 1936. He had been in failing health for several years.

Born in New York State in 1879, Dr. Lape was a graduate of the Grand Rapids Veterinary College, class of 1905. He practiced in Zanesville and Logan, Ohio, before locating in Adrian, where he had been in practice for about 25 years.

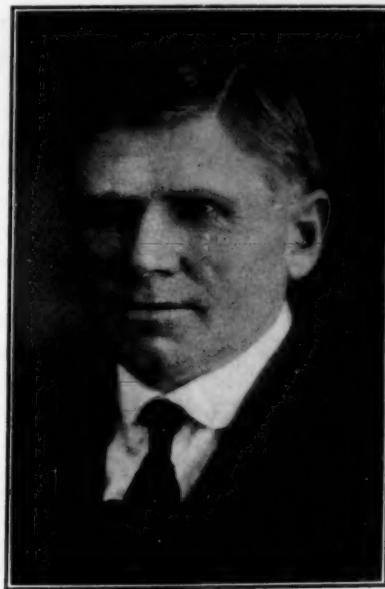
At the funeral services, six veterinarians acted as pallbearers. Dr. Lape is survived by his widow (née Mae Hamilton).

E. C. W. S.

BURTON W. CONRAD

Dr. Burton W. Conrad, of Sabetha, Kansas, died at his home March 14, 1936, after an illness of almost a year.

Dr. Conrad was born September 11, 1875, in the family home of his pioneer parents in the Capioma neighborhood. After attending local grade and high schools, he entered Kansas State College, from which he was graduated with the degree of B. Sc. in 1895. He was a member of the Kansas State College football team and later played on the Sabetha town team, the aggregate



DR. B. W. CONRAD

weight of whose members was more than a ton. He continued to play football for 16 years, and throughout his entire life maintained a deep interest in practically all forms of athletics.

In 1899, the family moved to Sabetha, where Dr. Conrad conducted a livery business until 1904, at which time he decided to study veterinary medicine and entered the Kansas City Veterinary College. After his graduation in 1907, he returned to Sabetha and entered practice. He continued in practice until

about six months ago, when illness compelled him to retire in favor of his son-in-law, Dr. Francis J. Reid (St. Jos. '18). The following tribute was paid to Dr. Conrad in the local paper:

Among the intangible assets of a community are those citizens who have helped to formulate its ideals and determine its progress. Dr. Conrad was one of those individuals who gave unstintingly of his time and resources to aid community enterprises. Whatever he attempted became a center of interest to him and received his best efforts. He was entrenched in the life of the community, and was considered a town institution. Old neighbors and friends of a lifetime made him their confidant. His sympathetic confidence and interest in individuals, as well as groups, gained for him a retinue of friends. We mourn, with his family, his untimely death.

Dr. Conrad joined the A. V. M. A. in 1908 and served as a member of the Executive Board of District 6, from 1921 to 1926, and as resident secretary for Kansas, from 1928 to 1930. He was a member of the Kansas Veterinary Medical Association and its president for three years; a member and secretary of the Kansas State Board of Veterinary Examiners, and a member of the 12th International Veterinary Congress.

On October 29, 1918, he entered the Army Veterinary Corps, was commissioned as 2nd Lieutenant, and assigned to the Auxiliary Remount Depot, at Camp Funston, Kan. He was discharged March 19, 1919. Following the war, he was commissioned as captain in the Veterinary Reserve Corps. He served as president of the Northeast Kansas National Reserve Officers' Association, and was a charter member and one of the early commanders of the John L. Palmer Post of the American Legion.

Dr. Conrad had served as president of the Sabetha Chamber of Commerce for five terms. He was a charter member and past president of the Sabetha Golf Club, and a charter member of the Sabetha Kiwanis Club. He is survived by his widow, two daughters from a former marriage, and four sisters.

PERSONALS

BIRTHS

To DR. AND MRS. HOWARD F. FERGUSON, of Newport, L. I., N. Y., a son, George Howard, December 23, 1935.

To DR. AND MRS. ROY E. WILLIE, of Chicago, Ill., a son, Roy E., Jr., January 13, 1936.

To DR. AND MRS. G. A. BOYD, of Santa Rosa, Calif., twin boys, Thomas Waddell and Robert Felkins, February 15, 1936.

To DR. AND MRS. THOMAS J. GASSER, of Malvern, Pa., a son, Gerald Tice, December 17, 1935.

PERSONALS

DR. CHARLES R. OMER (K. S. C. '29) reports a change of address from Metuchen, N. J., to Chestertown, Md.

DR. C. C. WARKENTIN (San Fran. '16), formerly of Los Gatos, Calif., is now located at Gilroy, same state.

DR. M. J. BRAMLEY (O. S. U. '33) has taken over the Brooklyn Dog Hospital, 3429 Memphis Avenue, Cleveland, Ohio.

DR. A. J. ROONEY (McK. '20), formerly of Peotone, Ill., has taken over the practice of the late Dr. Leo J. McLaren, at Joliet, Ill.

DR. G. U. MARCHAND (Ont. '05), of Uhrichsville, Ohio, was badly bruised when his car was sideswiped by a truck, on February 10.

DR. S. A. PECK (K. C. V. C. '04), of Oak Grove, Mo., has been engaged in tuberculosis eradication work in Nebraska since August, 1933.

DR. B. C. HUNT (McK. '19), who has been in the government service the past 18 months, has resumed his practice at Crystal Lake, Ill.

DR. CARL J. FOX (Mich. '26), recently in practice at Patterson, Calif., has returned to Michigan and located at Ovid for general practice.

DR. J. F. HORR (Wash. '30), formerly in practice at Ferndale, Calif., has removed to Woodland, in the same state, and is now practicing there.

DR. C. McCANDLESS (Chi. '15), of Salem, Ohio, has announced his candidacy for County Commissioner at the Republican primaries, May 12.

DR. FRED E. GRAVES (Chi. '16), of Belvidere, Ill., was elected president of the Boone County Agricultural Society at the annual meeting in January.

DR. L. B. WOLCOTT (K. S. C. '12) is now associated with Dr. J. J. Zilligen (U. P. '06) in the Los Angeles Dog and Cat Hospital, 1138 N. LaBrea Avenue.

DR. R. D. TURK (K. S. C. '33) has accepted a position as assistant veterinarian at the Texas Agricultural Experiment Station, College Station, Texas.

DR. I. D. WILSON (Iowa '14), of Blacksburg, Va., is convalescing at his home after being an appendicitis patient in a Roanoke hospital for over a month.

DR. DELBERT W. TRUITT (Ont. '08), of Evansville, Ind., was kicked in the throat by an equine patient, on March 8, and his esophagus was almost severed.

DR. T. W. McDERMOTT (Ont. '87), of New Philadelphia, Ohio, has announced himself as a candidate for the office of coroner on the Republican ticket.

DR. FAY F. RUSSELL (Ont. '13-Corn. '16), of Concord, N. H., spent a part of the winter in Florida to get away from the extreme cold weather of the North.

DR. THOMAS L. CURRAN (St. Jos. '20), of Ottumwa, Iowa, has thrown his hat in the ring as nominee for State Secretary of Agriculture on the Democratic ticket.

DR. O. B. NEELY (Iowa '24), of Union City, Tenn., is constructing a modern veterinary hospital on West Main Street, with wards for both large and small animals.

DR. GLEN L. NOBLE (Mich. '34), who has been associated with Dr. G. E. Cook (O. S. U. '03) at Fayette, Ohio, is now practicing on his own account at the same place.

DR. WILLIAM H. AHLERS (Iowa '33) has resumed his practice at Lamotte, Iowa, after some months spent in Texas on tuberculosis eradication work with the U. S. B. A. I.

DR. J. T. REDMON (Ind. '09) has been appointed city veterinarian of Danville, Ill. There have been quite a number of cases of rabies reported in and around Danville recently.

DR. C. R. COLLINS (Iowa '28), of Osceola, Nebr., has acquired the hospital and practice formerly conducted as a partnership under the name of Drs. Oberg and Collins, at Osceola.

DR. P. J. MEGINNIS (Iowa '31), until recently a member of the U. S. B. A. I. staff in Chicago, has taken over the practice and hospital of the late Dr. H. S. Wooters, at Champaign, Ill.

DR. W. W. LICHTY (Chi. '04), of Woodstock, Ill., addressed the Dairy Short Course meeting at the community high school, March 19, on the subject of "Contagious Abortion, or Bang's Disease."

DR. A. T. FLETCHER (Chi. '08), formerly mayor of Virden, Ill., is in the employ of the U. S. Department of Agriculture on tuberculosis eradication. He was transferred from Texas to California, February 1.

DR. GEORGE A. FERGUSON (U. S. C. V. S. '20), of Leaksville, N. C., has been appointed City Veterinarian of Reidsville, N. C. Reidsville is about 14 miles from Leaksville, where Dr. Ferguson will continue to reside for the time being.

DR. W. R. VAN NESS (Ont. '07-McK. '08), of Detroit, Mich., has received orders from his physician to take a rest of several months. He and Mrs. Van Ness are planning a motor trip through the Southwest and then up the Pacific Coast.

DR. C. A. PALMER (Iowa '20) has been appointed City Milk and Meat Inspector for Gainesville, Fla., succeeding the late Dr. H. N. Lawrence. Dr. Palmer recently completed the construction of a modern hospital for small animals at Gainesville.

DR. F. A. ZIMMER (O. S. U. '09), state veterinarian of Ohio, was on the program of the annual meeting of the Dayton branch of the Producers Live Stock Association, February 27. His subject was "Regulation and Disease Control Measures."

DR. G. A. ROBERTS (K. C. V. C. '03), formerly of Christiansted, Saint Croix, Virgin Islands, has accepted the position of veterinarian and animal husbandman for the Dominican Republic. He is now located at Ciudad Trujillo, formerly known as Santo Domingo City.

DR. FRANK THORP, JR. (Iowa '26) recently completed the work for his Ph. D. degree in bacteriology under Dr. F. W. Tanner at the University of Illinois, and has accepted a position as associate pathologist at the Colorado Agricultural Experiment Station, Fort Collins.

DR. WARREN J. EMBREE (Chi. '10), for many years chief veterinarian of the Western Weighing and Inspection Bureau, has been appointed Agricultural Representative and Live Stock Agent of the New York Central System, with headquarters at Columbus, Ohio, effective February 16.

DR. RICHARD HARRISON (Ont. '91), of Bad Axe, Mich., celebrated his 87th birthday on February 27. He settled in Bingham Township, Huron County, in 1887, and in addition to practicing veterinary medicine, he served as township supervisor, justice of the peace, and school moderator.

DR. C. A. BRANDLY (K. S. C. '23), formerly assistant professor of bacteriology at Kansas State College and poultry pathologist at the Kansas Agricultural Experiment Station, has been appointed associate pathologist for the Illinois Department of Agriculture and associate chief in animal pathology and hygiene, University of Illinois, effective March 1.